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RAINFALL AND CROPPING PATTERNS

Volume. XV

UTTAR PRADESH

GOVERNMENT OF INDIA
MINISTRY OF AGRICULTURE AND IRRIGATION
NEW DELHI

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RAINFALL AND CROPPING PATTERNS

UTTAR PRADESH

INTRODUCTION

1.1 The human population of the country is estimated to rise from the 1971 Census figure of 548 million to 935 million in 2000 AD. This rise calls for increased production. Land resources being limited emphasis has to be placed on increasing productivity per unit area. Temperature and other climatic conditions being favourable for crop production throughout the year over most parts of the country, it is possible to grow more than one crop in a year provided water, the most important input, is available. In some parts of the country the rainy season is long enough to provide scope for double cropping. This potential is yet to be fully exploited. There is scope for increasing irrigation resources in the country, but our estimates show that the area under irrigation is not expected to be more than 42 per cent of the total cropped area even in 2000 AD as against 22 per cent in 1970-71. Therefore, judicious utilisation of direct rainfall and irrigation water, singly and in combination, will have to be thought of for increasing production.

1.2 Farming technology has so advanced that it is possible to increase crop yields even under rainfed conditions, but the choice of crops would have to depend upon the amount and distribution of the prevailing rainfall. Additionally, it will be necessary that the maximum possible quantity of rain water is conserved in ponds and pools situated either within the farm area or elsewhere, in soil profiles and underground storages so that the same could be readily used to save crops in times of water stress. Not only in rainfed farming but even under irrigated conditions, one will have to plan for the most economic and efficient use of water so as to derive maximum possible benefit from rainfall and reduce dependence on irrigation. This necessitates a close study of the existing cropping patterns vis-a-vis rainfall patterns aimed at determining the nature of changes needed in the former. The cropping patterns depend primarily on the soil and climatic factors but the evolution of a cropping pattern in course of time is the combined effect of soil, climate, food habits and requirements and economic factors. In the context of increasing production, it is necessary to examine the cropping patterns from a scientific angle and find out possible alternative patterns having higher potential. Accordingly, the Commission undertook a comprehensive study of the rainfall and cropping patterns of the country using taluk or tehsil as unit of area. It covered several other relevant factors such as orography, land use data, human and livestock populations, soil and climate, the object being to make, as far as possible an integrated assessment.

1.3 Chapter 14 on Rainfall and Cropping Patterns of the Commission's Report presents a consolidated account of the data collected together with analysis of their inter-relationships on all-India basis. In this analysis the Commission has been greatly benefited by the discussions with the concerned officers of State Governments. It was realised that by condensing the vast amount of information collected from each State into the small space of a chapter, many important and peculiar features of individual States were likely to be missed and hence the data and analysis of each State have been presented in separate volumes. The manner of presentation is similar to Chapter 14. It has also been considered desirable to include in each State volume the methodology and suggestions for future cropping patterns, which are practically the same as given in Chapter 14.

2 METHODOLOGY

2.1 The chief features of the study are (a) use of taluk or tehsil as unit of area for all basic data and analysis; (b) introduction of coded numerical forms to express patterns of distribution of monthly rainfall throughout the year, crops and livestock; (c) inclusion of information on orography, temperature, evapotranspiration, rainfall, soil, irrigation, land use, human and livestock populations and yield performance of crops, all of which influence in different ways and degrees the cropping patterns of a place and (d) presentation of coded information on rainfall, crops and livestock on 1 : 1 million scale maps.

Rainfall Patterns

2.2 A major feature of Indian rainfall is that the southwest monsoon season (June to September) accounts for 70 to 95 per cent of the annual rainfall throughout the country except in the south east peninsula and kashmir and adjoining hill areas. The monsoon as well as the annual rainfall show large fluctuations from year to year but, as stated in Chapter 13 on Climate and Agriculture, there is no significant evidence of any trend or periodicity in either of them. Considered in relation to crop production, the total annual or seasonal rainfall does not have much significance and what is important is its distribution during the period of growth of different crops. A relevant question, therefore, is whether rainfall should be examined on a weekly, fortnightly or monthly basis. The coefficient of variation (CV) of monthly rainfall is as high as 40-50 per cent even in the rainiest month of July over most of the central, northern and eastern India. In the south, excluding the west coast, CV is higher and varies from 60 to 100 per cent. The variability of weekly or fortnightly rainfall being still greater, makes the use of either of them undependable as indicators of rainfall distribution. For a macro-study like the present, monthly rainfall data which are more dependable and also the most convenient to handle have been used.

2.3 In order to relate crop production with rainfall certain norms have to be assumed depending on the duration of the crops and their water requirements. On the basis of available information and the fact that most crops mature in about 90 days, the following broad norms have been drawn up :

(i) Rainfal greater than 30 cm per month (cm pm), for at least three consecutive months would be suitable for a crop like paddy whose water need is very high.

(ii) 20-30 cm pm for not less than three consecutive months would be suitable for crops whose water need is high but less than that of paddy, for example, maize and black gram.

(iii) 10-20 cm pm for at least three consecutive months would be suitable for crops requiring much less water, eg, bajra and small millets.

(iv) 5-10 cm pm for three consecutive months would be just sufficient for crops which have low water requirements, eg, *moth* (*P. aconitifolius*) and ephemeral grasses.

(v) Rainfall less than 5 cm pm for three consecutive months is not of much significance for crop production.

2.4 For denoting the year's rainfall distribution using monthly totals, a convenient code in letter symbols with numerical subscripts explained below, has been evolved. The letters A to E in Table 1 indicate the ranges of monthly rainfall and the subscripts to these refer to the number of months having these ranges of rainfall e.g. A indicates two monthe with rainfall greater than 30 cm pm. The ranges correspond to those stated in the preceding paragraph.

TABLE I

Code for Rainfall Data

Symbol	Monthly rainfall cm pm
A+	Greater than 30
B	20—30
C*	10—20
D*	5—10
E*	Less than 5

+An examination of monthly rainfall in the country shows that except for areas in the West coast and some hill stations in extreme northeast, normal monthly rainfall seldom exceeds 40 cm.

*In distributions containing ranges of rainfall covered by A or B termed briefly as A & B types amounts less than 10 cm are not so significant and their frequency is generally small. To reduce the number of combinations, D is omitted in A or B type distributions; instead E is used to denote less than 10 cm pm. Thus B_2E_2 would denote two months of 20—30 cm pm and two months less than 10 cm pm rainfall.

The southwest monsoon months of June to September being the principal rainy season dominate the rainfall distributions of the country. To indicate the season's importance, monthly rainfall distribution during June to September is shown in brackets in the annual pattern. To the right of the bracket is the distribution for the post-monsoon months, namely, October to January and to the left that for the pre-monsoon months namely, February to May. In order to explain how such a coded rainfall distribution written in symbols with numerical subscripts has to be interpreted, a hypothetical example may be considered. D_1 E_3 $(A_2$ B_1 $C_1)$ C_1 D_3, in which for each of the three periods, the symbols are in order of decreasing rainfall which is not necessarily the calendar sequence, can be explained as under :

(i) D_1 E_3 represents the period February to May in which one month's rainfall (usually May) is in the range of 5—10 cm and the remaining three months get less than 5 cm pm.

(ii) A_2 B_1 C_1 represents the period June to September, in which two months (usually July and August) get more than 30 cm pm rainfall, one month (September) gets 20—30 cm and the remaining month, i.e. June gets 10—20 cm.

(iii) C_1 D_3 represents the period October to January in which October gets 10—20 cm rainfall and the rest 5—10 cm pm.

Boundaries of Rainfall Zones

2.5 Since differences in monthly, seasonal and annual rainfall are not large within short distances, linear interpolation of rainfall data is permissible. Rainfall data being point measurements, isolines for the same or nearly the same type of distribution of monthly rainfall can, therefore, be drawn. These isolines may not necessarily follow the boundaries of taluks which are taken to be unit of area in this study and hence for delineation of boundaries the following procedure has been adopted :

(i) Where variations are small, isolines follow the taluk boundaries;

(ii) where variations are large, isolines delineate the zone boundaries; and

(iii) any taluk, more than three quarters of which lies outside of a zone is not considered a part of that zone.

2.6 If an identical distribution is observed over two or more adjacent taluks a pattern is said to have evolved and the area covered by it is distinguished as a zone and indicated suitably by a Roman numeral. Rainfall patterns have been identified for the whole country using the methodology described above. The data used for the analysis are the monthly normals of rainfall (1901 to 1950)[1] and the patterns and zones are depicted all-India map which forms part of Chapter 14 on Rainfall and Cropping Patterns of the Commission's Report.

Cropping Patterns

2.7 The basic data for the study of cropping patterns of the country are the areas under different crops in each of the taluks. A large number of crops are grown in a taluk but most of them occupy small areas, often less than one per cent of the total cropped areas of the taluk. With a view to limiting the number of crops constituting a pattern only those crops are considered which individually occupy 10 per cent or more of the gross cropped area of the taluk. In this process, several crops have to be excluded, even though they may be otherwise important. The minimum limit has been fixed at 70 per cent, so that the number of crops, which together cover at least 70 per cent of the gross cropped area, and in which none occupies less than 10 per cent, is not large. Trial computations have shown that in such distributions any crop occupying more than 10 per cent area is rarely omitted and the number of crops hardly exceeds five. When the same distribution holds good for two or more adjacent taluks, a pattern is obtained.

2.8 As in the case of rainfall, percentage area coverage by crops is expresed by means of numerical subscripts affixed to crop symbols shown in Table 2. The list of crops given below is comprehensive and will hold good for all the States.

TABLE 2

Crop Symbols and Area Intervals

Crop	Symbol
1 rice	Pd
2 wheat	W
3 jowar (kharif)	Jk
4 jowar (rabi)	Jr
5 bajra	B
6 maize	M
7 ragi	R
8 small millets	Mt
9 barley	Ba
10 oats	Oa
11 gram	G
12 pigeonpea (tur)	T
13 pulses other than pigeonpea and gram	Pu
14 groundnut	Gn
15 oilseeds other than groundnut	O
16 cotton	C
17 jute	Ju
18 other fibres	Fb
19 sugarcane	S
20 potato	Pt
21 vegetables	V
22 fruits	Fr
23 tapioca	Ta
24 plantations	L
25 fodder	F
26 chillies	Ch
27 tobacco	To

Area interval (percent)	*Subscript*
70 or more	1
50—70	2
30—50	3
10—30	4
less than 10	5

The crop code contains the crop symbol and the appropriate subscript. In writing crop distribution, the first crop has always the highest area but the rest may not necessarily follow the order of decreasing areas. For example, crop distribution, C_3 Jr_4 Mt_4, means that cotton area is 30—50 per cent, and jowar rabi and millets each occupies 10—30 per cent of the gross cropped area, the total being 70 per cent or more. Two or more taluks having the same distribution of crops constitute a pattern. Cropping patterns so derived have been indicated on maps of 1.1 million size.

Relative Yield Index of Crops

2.9 Besides in absolute figures, the yield of a crop has also been expressed as per cent of all-India average which is called Relative Yield Index (RYI). Relative Yield Index values have been computed for the principal crops on the basis of (1968-69 to 1970-71) data available in the records of the Directorate of Economics and Statistics, Ministry of Agriculture and Irrigation.

Livestock Patterns

2.10 The livestock patterns are relevant only insofar as these are related to production of fodder and feeds. As talukwise data were not available for the livestock Census, 1972, those of 1966 Census as published by the States have been used. The animals considered for livestock analysis are shown in Table 3 together with their symbols.

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[1] Memoirs of India Meteorological Department, Volume XXXI, Part 3, 1962.

TABLE 3

Livestock Symbols

Category	Symbol
cattle :	
male (over 3 years)	Cm
female (over 3 years)	Cf
young stock (under 3 years)	Cy
buffaloes:	
male (over 3 years)	Bm
female (over 3 years)	Bf
young stock (undre 3 years)	By
sheep	S
goats	G
horses, mules and ponies	H
donkeys	D
camels	Ca
pigs	P

The livestock patterns are expressed in coded form in the same manner as the cropping patterns.

Soils

2.11 Soil data on a taluk basis are not available for all the areas of the country. As such, soils have been discussed in a general manner using the traditional nomenclature in describing their characteristics.

Other Data

2.12 The sources of other data featuring in the study are given below :

item	*source*
taluk area	States' Census Reports 1971 or from the data furnished by the States in their land-use returns.
orography	maps of the Survey of India and National Atlas Organisation.
temperature	Climatological Tables of Observatories in India. India Meteorological Department, 1931—1960 normals
evapotranspiration	scientific Report No. 136 of the India Meteorological Department, 1971.
human population	Census of India, 1971
irrigation and land use statistics	basic data pertaining to land utilisation statistics obtained from the States and refer mostly to 1969-70.

Presentation of Information

2.13 The tables required for following the text are given in the text itself at appropriate places, whereas the basic data are appended as follows :

APPENDIX 1	Talukwise Land Use (1969-70) and Population Statistics, (arranged according to State rainfall zones).
APPENDIX 2	Districtwise Livestock Population —1966.
APPENDIX 3	Zonewise, Information on Rainfall, Rainy days and Cropping Patterns.
APPENDIX 4	Zonewise area under Principal Crops.

2.14 Rainfall, cropping and livestock patterns of each State are indicated on maps in the 1:1 million scale and given in Appendices 5, 6 and 7 respectively. In the case of rainfall patterns, the zonal numbers in State maps have been given in Roman numeral and their all-India equivalents as used in Chapter 14 of the Commission's Report have been shown in three digit Arabic numerals within brackets.

3 GENERAL FEATURES

3.1 The State has an area of 294 thousand sq km and consists of 54 districts. A feature worth special mention is that the hilly areas in seven districts occupy about 42 thousand sq km accounting for 14 per cent of the state area. One of the seven districts, viz, Nainital extends over a substantial plain area as well.

District Areas

3.2 The areas of the districts vary from 2.3 to 11.3 thousand sq km. Rampur and Lucknow have the lowest areas of 2.3—2.5 thousand sq km. while Jhansi (10.1 thousand) and Mirzapur (11.3 thousand) have the largest areas. The frequency distribution of district areas is as follows :

plains districts:

area ('000. sq km)	0-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10	Above 10
no of districts	—	2	6	18	9	4	6	—	—	2

hills districts:

area ('000. sq km)	0-4	4-6	6-8	8-10
no. of districts	—	2	3	2

In this table, total area (hilly & plain) of Nainital district has been considered.

Taluk Areas

3.3 The number of taluks (excluding hill districts) is 207. The hill districts in all have 26 taluks according to the 1971 Census Report, but the statement furnished by the State shows three more taluks in Nainital district. Areas of taluks (in the non-hill districts) vary from less than 500 to over 3000 sq km. The distribution of taluk areas is as follows :

area (sq km)	251—300	301—500	501—1000	1001—2000	More than 2000
no. of taluks	1	4	73	119	10
percent of total area	2	35	58	5	

Elevation

3.4 The principal feature is that the State (excluding hill areas) is a vast plain, the maximum elevation in most of the taluks being less than 300 metres above sea level (masl). Two thirds of the taluks have a minimum elevation of less than 150 masl, one-fourth have an elevation of less than 100 masl, and in only 10 taluks, the minimum elevation is 250 to 300 masl. The maximum elevation exceeds 300 masl in about a dozen taluks, with Dehradun taluk having the largest elevation ranging from 300 to 2,610 masl. In 75 per cent of the taluks, the differences in elevation are less than 20 metres. The large differences exceeding 100 metres are only in a dozen taluks. The frequency distribution of differences is as follows :

height difference in metres	1—20	21—50	51—100	greater than 100	Total
no. of taluks	56	23	15	13	207
per cent	76	11	7	6	100

Population

3.5 Uttar Pradesh is a populous State with a population of 18.3 million, according to 1971 census. The average population density for the whole State is 300 per sq km, as against 182 of all-India. Excluding hill districts, the district population varies from 0.75 million in Pilibhit to 3.4 million in Meerut. Thirty seven of the 47 districts have population density of more than 300 and six more than 500 person per sq km. The highest population density of 639 persons is in Lucknow. This may be due to the fact that the area of this district is small (only 2500 sq km) and includes the populous city of Lucknow. Meerut, the district with the highest population, has a density of 559 per sq km. The southern districts along the boundary of the State from Jhansi to Mirzapur have the lowest population density all of them being in the range of 130 to 155 only.

3.6 *Taluk Density* : Frequency distribution of density of taluks in the districts and for the State are shown in Table 4. Seventy per cent of the taluks have a population density of more than 300 and 13 per cent have higher than 500 persons. Kanpur, Meerut, Agra and Lucknow taluks have a density of over 1,000, whereas four taluks, located in Allahabad, Jhansi (2) and Mirzapur (1) districts have population density of less than 100.

Land Use

3.7 Though area under forest in the State is only three per cent of the reporting area, Dehradun has 29 per cent area under forests followed by Mirzapur district with 16 per cent and six other districts between 5 and 8 per cent. Land not available for cultivatoin is 13 per cent of the State area. The district areas vary between 9 and 21 per cent. Cultivable waste area is not high (6 per cent) but in some of the districts, the percentages are high, like Jhansi (24 per cent), Mirjapur (13 per cent) and Etawah (11 per cent). Fallow lands cover 6 per cent of the reporting area. Current fallows account for more than half of the area under fallows.

3.8 Uttar Pradesh is one of the few States in the country which has a high percentage of net sown area, viz 70 per cent of the total reporting area as against 42 per cent of all-India. The district averages show wide variations from 40 per cent in Dehradun to 75-85 per cent in twenty other districts, the highest being Mathura with 83 per cent. The net sown areas of taluks show variation from 27 per cent of the reporting area in Dudhi to over 80 per cent in 39 taluks (19 per cent of total number of taluks). Only a small percentage of taluks has less than 50 per cent net sown area.

A Districtwise data on land use statistics (per cent of reporting area) are given in Table 5.

Irrigation

3.9 The net area irrigated during 1969-70 was about 7 million ha representing 40 per cent of the net sown area. The district averages range from 11 per cent in Bahraich to 82 per cent in Meerut. The extreme western districts from Muzaffarnagar to Aligarh have a high percentage of irrigated areas ranging from 77 to 82 per cent of the net sown area. The next in order are Mathura and Mainpuri districts with 65 per cent. Four eastern districts, Basti, Faizabad, Azamgarh and Jaunpur have 50 to 55 per cent net irrigated area. The lowest percentage is 11-12 per cent in Bahraich and Kheri and 16-17 per cent in the southern districts of Hamirpur and Banda. The percentage of irrigation among the taluks is as follows :

net irrigated area (per cent)	10	11—30	31—50	51—70	71—90	91—100
no. of taluks	16	50	77	40	22	2
per cent of total	8	24	37	19	11	1

On the whole, Uttar Pradesh has a fairly large percentage of irrigated areas. Regarding the source of irrigation, well irrigation is dominant covering 56 per cent of the irrigated area, comprising tube-wells 30 per cent and ordinary wells 26 per cent. Canals irrigate 35 per cent of net irrigated area. Tanks, lakes, ponds etc. irrigate a small area of 9 per cent.

Soils

3.10 The soils in the State are mainly alluvial. Mirzapur, Southern half of Allahabad and eastern half of Banda district have red and yellow soils. Western half of Banda, Hamirpur, Jalaun and northern parts of Jhansi district are covered with red sandy soils. The rest of Jhansi district has mixed red and black or medium black soils. A narrow belt of terai soils in the north runs from bijnor to Gorakhpur. This belt extends in the north into Nainital and Garhwal areas. The rest of the hill areas have mostly brown soils.

Rainfall

3.11 The rainfall patterns are shown on a Map in Appendix 5 and are also discussed in the next section in detail together with cropping and livestock patterns. However, a brief account of rainfall distribution in general is given here. The annual rainfall of the State is 98 cm. Eastern part of Uttar Pradesh has an average rainfall of 101 cm in 48 rainy days and western part gets 96 cm rainfall in 44 rainy days. The monthly and annual rainfall together with variability is given in Table 6.

3.12 To the north of line from Bareilly to Saharanpur the rainfall in January is 2.5 to 5 cm and slightly higher in some of the hill areas. Almora and Garhwal areas get 5 to 7 cm. Elsewhere in the State, the rainfall during the month ranges from 1 to 2.5 cm. Rainfall in February is nearly similar. March rainfall is less than 1 cm in the southern half and 1 to 2.5 cm elsewhere. April rainfall is confined to the hill areas, where it amounts to 1 to 3 cm. Rainfall in May is negligible to the south of line from Delhi to Lucknow and to the north, the range is between 1 to 2.5 cm and increases to more than 5 cm in some of the hill areas. June average is mostly 5 to 10 cm to the west of line from Dehradun to Mirzapur. In other parts, it is 10 to 20 cm the higher values being reached near the north eastern boundary. July rainfall is heavy, exceeding 30 cm to the north and east of line from Dehradun to Ballia. Along the north-eastern borders rainfall rises to 40 to 50 cm. In the remaining parts, it is mostly in the range of 20 to 30 cm. It is less than 20 cm from Muzaffarnagar to Agra. 30 cm isoline is close on the southern boundary. The rainfall in August is nearly similar to July. September averages are much lower and exceed 20 cm to the north and east of line Dehradun to Ballia and thence to Mirzapur. It is 10-20 cm in other areas. June to September total is 50 to 75 cm to the west of line Shaharanpur to Bareilly and Lucknow and then to Jhansi. In the plains, rainfall is mostly 75 to 100 cm. During October, the rainfall ranges from 1 to 2.5 cm in the areas to West of line from Saharanpur-Bareilly-Hamirpur. In the rest of the plains, the amounts are 2.5 to 5 cm rising in the northeast to more than 5 cm. November and December rainfall is small and almost negligible.

3.13 West of Saharanpur to Jalaun, rainfall is 60 to 75 cm. East of Dehradun to Allahabad, the rainfall exceed, 100 cm and in between, the range of rainfall is 75-100 cm.

3.14 January and February contribute 5 to 8 per cent of annual rainfall in the northwestern districts and 3 to 5 per cent elsewhere. June to September is the main rainy season. June accounts for 8 to 12 per cent of annual rainfall. July and August are each about 30 per cent of annual and two together account or 65 per cent of annual rainfall in Jhansi and Hamirpur, 60-65 per cent south of line from Mathura to Varanasi and 55 to 60 per cent in the rest of the plains. September rainfall is 17 to 20 per cent of annual.

Rainfall variability

3.15 The monthly variability is of the order of 100. In January to May winter rainfall of the plains is highly variable, and hence, entirely undependable. In June, co-efficient of variation (CV) is less than 80 east of line from Dehradun to Varanasi and higher in other areas Co-efficient of variation is higher than 100 to the areas west of Saharanpur to Lucknow and Mirzapur. June rainfall, though 10 cm on an average, is highly uncertain. July CV is 50 to 60 in areas to the west of line from Saharanpur to Faizabad and from there to Banda. CV in the rest of the area is 40 to 50. During August CV is 60 or higher. In the extreme west of CV is 50 to 60 to the west of line from Saharnpur to Kanpur and then to Jhansi and is less than 50 elsewhere. July and August have some similarity but the area of lower CV in the east is larger during August. This may be seen also from CV value for August for east Uttar Pradesh which is less than July value. In the case of west Uttar Pradesh, CV for July and August are nearly the same. September CV is higher, being 60 to 80 Western districts from Saharanpur to Mainpuri have CV above 80. Coefficient of variation is 30 to 40 to the south west of line from Dehradun to Barabanki and thence to Banda and 20 to 30 in remaining parts.

Temperature

3.16 Normals of daily maximum, minimum and mean daily tempertures for 19 observatory stations are given in Tables 7-9. Some of the main features are briefly described below :

(i) With an average of 23°C in January, the mean daily maximum temperature rises to 39-40°C in May and June, many areas having averages of 40-41°C. The maximum temperature is 33 to 35°C in August and September. The mean annual maximum temperature is 32°C.

(ii) Mean daily minimum temperature is lowest during January, the average being 8 to 10°C. December minimum is slightly higher. During July to September, minimum temperatures generally are 24 to 27°C. The mean annual minimum is 18-20°C.

(iii) December and January are the coldest months of the year. May and June are the hottest months with nearly the same temperatures of 32 to 34°C. July average is 30°C and August—September is 28 to 29°C. Dehradun-Roorkee areas, because of their elevation, have average of a few degrees lower. The mean annual temperature is 25-26°C.

(iv) The lowest temperature recorded in the area is below freezing.

(v) The highest temperatures are between 45 and 47.5°C in a small northern belt.

Potential Evapotranspiration (PE)

3.17 Monthly and annual average calculated PE values for 19 observatory stations in the State are given in Table 10. In the winter months of December and January, PE is 5 to 6 cm except in Dehradun Roorkee area, where PE is about 4 cm. PE rises in the hottest months of May and June to about 20 cm. In Kanpur, it is a few cm higher—25 cm in May and 23 cm in June. July PE is 13-14 cm and August 11-12 cm only. In September, rainfall is about 19 cm but its PE is 12 to 13 cm. The anunal PE is 150 to 160 cm. In December, rainfall in Uttar Pradesh west is 1 cm but PE is 5 to 6 cm except in Dehradun and Roorkee areas, where PE is 4 cm. PE is similar in January, but rainfall is about a third—only 2 cm. PE is 20 cm in May and June with rainfall of 1 and 9 cm respectively. July PE is 13 to 16 cm and August 12 to 14 cm. September rainfall is 17 cm, slightly higher than PE of 13-14 cm. In all the other months. PE is much higher than the rainfall. The annual PE is 140-150 cm against a total rainfall of 96 cm.

Climate classification

3.18 The area to the south of the line from Muzaffarnagar to Lucknow and Varanasi is semi-arid. To the north of it. the classification is dry to subhumid except in Dehradun area, which is per-humid. The western districts are the driest in the State.

TABLE 4

Density of Population (per sq km)

District	District density per sq km	Number of taluks	No. of taluks with population density of 0—100	101—150	151—200	201—300	301—400	401—500	501—750	751—1000	More than 1000
Bijnor	308	4	—	—	—	2	1	1	—	—	—
Moradabad	410	6	—	—	—	1	1	3	1	—	—
Budaun	318	5	—	—	—	3	2	—	—	—	—
Ram Pur	388	5	—	—	—	1	3	—	1	—	—
Bareilly	432	5	—	—	—	1	3	—	1	—	—
Pilibhit	215	3	—	1	—	1	1	—	—	—	—
Shahjahanpur	282	4	—	1	—	2	—	1	—	—	—
Dehradun	186	2	—	—	—	1	—	1	—	—	—
Saharanpur	372	4	—	—	—	—	1	2	1	—	—
Muzaffarnagar	414	4	—	—	—	—	1	3	—	—	—
Meerut	559	6	—	—	—	—	1	2	2	—	1
Buland Shahar	444	4	—	—	—	—	2	1	1	—	—
Aligarh	420	6	—	—	—	—	4	1	1	—	—
Mathura	340	4	—	—	—	1	2	1	—	—	—
Agra	479	7	—	—	—	2	2	1	1	—	1
Etah	354	4	—	—	—	—	3	1	—	—	—
Mainpuri	332	5	—	—	—	1	3	1	—	—	—
Farrukhabad	365	4	—	—	—	—	3	1	—	—	—
Etawah	335	4	—	—	—	1	3	—	—	—	—
Kanpur	491	6	—	—	—	5	—	—	—	—	1
Fatehpur	304	3	—	—	—	1	2	—	—	—	—
Allahabad	405	8	1	—	1	1	2	3	—	—	—
Jhansi	130	6	2	2	1	1	—	—	—	—	—
Jalaun	178	4	—	1	2	1	—	—	—	—	—
Hamirpur	137	5	—	4	1	—	—	—	—	—	—
Banda	155	5	—	2	3	—	—	—	—	—	—
Lakhimpur kheri	196	3	—	—	1	2	—	—	—	—	—
Sitapur	325	4	—	—	—	2	2	1	—	—	—
Hardoi	308	4	—	—	—	2	2	—	—	—	—
Unnao	323	4	—	—	—	—	4	—	—	—	—
Lucknow	639	3	—	—	—	—	1	1	—	—	1
Rai Bareli	332	4	—	—	—	1	3	—	—	—	—
Bahraich	254	3	—	—	—	2	1	—	—	—	—
Gonda	314	4	—	—	—	1	2	1	—	—	—
Bara Banki	368	4	—	—	—	—	3	1	—	—	—
Faizabad	436	4	—	—	—	—	1	2	1	—	—
Sultanpur	370	4	—	—	—	—	3	1	—	—	—
Pratapgarh	377	3	—	—	—	—	2	1	—	—	—
Basti	408	6	—	—	—	—	3	3	—	—	—
Gorakhpur	481	4	—	—	—	—	2	—	2	—	—
Deoria	520	4	—	—	—	—	—	2	2	—	—
Azamgarh	497	6	—	—	—	—	—	4	2	—	—
Jaunpur	502	5	—	—	—	—	—	3	2	—	—
Ballia	519	3	—	—	—	—	—	2	1	—	—
Ghazipur	453	4	—	—	—	—	—	3	1	—	—
Varanasi	560	4	—	—	—	1	—	1	1	1	—
Mirzapur	136	4	1	1	1	1	—	—	—	—	—

TABLE 5

Land use Statistics (per cent @ of total reporting area)

District	Forest	Area not available for cultivation			Other uncultivated lands excluding fallow lands				fallow lands			
		Area under non-agri. uses	Barren and uncultur-able land	Total	Perma-nent pastures & others grazing lands	Land under misc. trees crops & groves not in-cluded in net area sown	Cultiva-ble land	Total	Fallow lands other than current fallow	Current fallows	Total	Net area sown
1	2	3	4	5	6	7	8	9	10	11	12	13
Dehradun	29·4	11·5	1·4	12·9	0·1	5·7	8·7	14·0	1·4	1·6	2·9	40·3
Saharanpur	0·1	13·1	1·5	14·6	0·1	0·9	2·9	3·9	0·6	2·7	3·3	78·0
Muzaffarnagar	0·4	9·7	3·3	12·9	0·3	1·2	3·3	4·8	1·1	2·6	3·7	78·1
Aligarh	0·0	7·1	7·5	14·6	0·5	1·0	2·3	3·9	1·9	1·7	3·6	77·8
Mathura	0·3	7·1	1·9	8·9	0·4	0·7	2·0	3·2	1·8	2·7	4·4	83·1
Agra	6·0	6·8	4·7	11·5	0·3	0·5	3·2	4·0	1·3	2·4	3·7	74·8
Meerut	1.4	6·0	3·9	9·9	0·4	1·2	3·4	4·2	1·4	2·4	3·8	78·1
Bulandshahar	0·4	9·6	3·3	12·9	0·3	1·2	3·3	4·8	1·1	2·6	3·7	77·9
Mainpuri	0·8	5·9	15·4	21·3	0·5	1·1	4·6	6·2	2·7	3·4	6·1	65·5
Etah	0·0	7·5	3·1	10·6	0·2	2·6	11·0	13·6	2·1	3·6	5·7	70·0
Bareilly	0·1	9·1	2·8	12·0	0·1	1·2	2·0	3·2	0·7	3·3	4·0	80·6
Bijnor	6·8	10·3	2·5	12·9	0·4	1·5	2·6	4·5	0·7	4·4	5·0	70·8
Badaun	0·6	7·5	3·0	10·5	0·2	2·7	2·9	5·8	1·9	2·7	4·6	78·5
Moradabad	1·3	7·6	2·5	10·1	0·2	1·2	2·7	4·1	0·9	3·4	4·3	80·1
Shahjahanpur	2·0	7·6	2·6	10·2	0·3	2·5	6·0	8·8	1·7	7·5	9·3	69·8
Pilibhit	8·1	10·0	1·5	11·5	0·3	3·3	5·1	8·6	1·4	4·1	5·5	66·3
Rampur	2·4	8·7	2·4	11·1	0·0	0·8	2·0	2·9	0·6	3·0	3·6	80·0
Farukhabad	0·6	8·7	6·2	14·9	0·7	3·1	7·1	11·0	2·6	3·1	5·6	67·8
Etawah	6·5	6·8	9·7	16·5	0·5	0·8	3·2	4·5	2·7	2·6	5·3	67·1
Kanpur	1·0	7·2	10·2	17·4	0·9	2·4	3·6	6·9	1·8	2·3	4·1	70·6
Fatehpur	0·1	10·0	6·2	16·2	0·9	2·0	5·2	8·1	2·8	3·2	6·0	69·6
Allahabad	2·1	10·2	5·2	15·4	0·1	2·9	6·5	9·6	2·8	5·5	8·3	64·6
Deoria	0·2	7·5	1·8	9·2	0·0	3·1	1·8	5·0	1·2	2·3	3·5	82·1
Basti	0·3	10·4	0·8	11·2	0·3	2·7	3·8	6·9	1·0	2·4	3·4	78·2
Azamgarh	0·3	9·2	3·7	12·9	0·1	2·7	3·9	6·7	1·2	2·1	3·4	78·0
Nainital	2·8	11·0	0·7	11·7	0·0	0·2	3·0	3·9	0·6	2·8	3·4	78·3
Jhansi	6·1	5·5	4·5	10·1	0·7	0·5	24·1	25·3	5·4	3·9	9·3	49·1
Jalaun	4·8	5·4	4·0	9·4	0·1	0·7	2·6	3·5	0·8	1·6	2·4	82·0
Hamirpur	4·0	5·5	4·2	9·7	0·1	0·3	8·5	8·9	2·7	3·5	6·4	70·7
Banda	3·4	4·7	6·4	11·0	Neg	3·5	9·3	12·8	3·2	3·6	6·9	65·9
Varanasi	1·5	9·9	3·3	13·2	Neg	3·4	2·3	5·7	2·1	2·5	4·6	74·9
Mirzapur	16·3	6·5	3·6	15·1	0·4	4·1	13·3	17·9	9·7	Neg	9·7	40·8
Jaunpur	Neg	7·6	3·4	11·0	0·3	2·5	4·7	7·5	2·8	4·0	6·8	75·5
Ghazipur	—	8·1	2·4	10·5	0·2	2·6	3·9	6·7	1·1	0·7	1·8	80·8
Ballia	—	9·1	7·4	16·5	Neg	3·6	2·3	5·9	1·0	2·5	3·4	74·1
Gorakhpur	8·0	8·0	0·7	8·8	Neg	2·7	1·7	4·5	1·4	1·5	2·9	75·6
Lucknow	1·1	9·3	7·1	16·4	1·7	4·6	7·5	13·8	3·0	3·2	6·2	62·4
Unnao	1·7	8·6	7·2	15·8	1·0	4·6	7·4	12·2	3·0	3·8	6·9	63·4
Raebareilly	0·6	10·5	6·5	17·0	0·7	6·4	8·0	15·1	2·2	3·0	5·1	62·2
Hardoi	0·7	7·6	5·3	12·8	0·8	3·9	6·4	11·1	2·7	9·5	12·2	63·2
Sitapur	0·7	9·5	1·1	10·7	0·1	2·9	3·2	6·2	0·8	5·0	6·9	75·3
Lakhimpur-Kheri	3·5	11·1	0·7	11·8	0·3	3·5	4·8	8·6	2·7	6·4	9·2	66·8
Faizabad	0·4	11·5	2·4	13·9	Neg	6·1	5·4	11·7	3·1	2·4	5·5	68·4
Gonda	2·7	9·5	0·7	10·2	0·1	3·0	5·6	7·8	2·0	2·2	4·1	75·0
Bahraich	2·1	9·4	1·6	10·9	0·3	3·3	4·0	7·6	2·1	2·7	4·8	74·5
Sultanpur	0·3	9·0	6·2	15·2	0·1	3·1	5·0	9·5	2·4	2·7	5·1	69·8
Pratapgarh	Neg.	9·5	6·2	15·7	Neg	7·6	4·7	12·3	3·1	1·3	4·4	67·6
Barabanki	0·9	11·7	2·1	13·8	0·3	6·0	6·1	12·4	1·9	3·6	5·5	67·3
State Total	2·8	8·4	4·2	12·7	0·3	2·6	5·7	8·7	2·3	3·2	5·5	70·3

@—Due to adjustments in the decimal figures, the totals may not in some cases add up to 100.

TABLE 6

Monthly and Annual Rainfall, number of Rainy days and Coefficient of Variation

Uttar Pradesh (east)	Jan	Feb	March	April	May	June	July	Aug	Sept	Oct	Nov	Dec	Annual
rainfall (mm)	15·8	18·9	8·7	6·8	14·9	100·5	301·6	295·8	191·2	41·6	5·9	6·0	1007·7
rainy days (No)	1·4	1·7	0·8	0·6	1·2	5·0	13·0	13·8	8·1	1·8	0·4	0·5	47·8
CV	99	107	140	166	86	59	36	25	43	128	230	146	18
Uttar Pradesh (west)													
rainfall (mm)	23·9	25·3	13·7	8·6	14·7	94·1	288·7	287·9	168·1	25·5	3·9	9·7	964·2
rainy days (No)	1·8	1·9	1·2	0·8	1·3	4·4	11·8	11·8	6·7	1·0	0·3	0·8	43·8
CV	84	89	99	112	75	68	33	33	61	147	203	121	19

TABLE 7

Normals of Daily Maximum Temperature (°C)

Station	Jan	Feb	March	April	May	June	July	Aug	Sept	Oct	Nov	Dec	Annual
Dehradun	19·1	21·4	26·4	32·1	36·2	35·3	30·4	29·5	29·6	28·2	24·7	20·9	27·8
Meerut	20·6	24·5	30·1	36·1	40·0	39·5	34·3	32·7	33·4	31·9	27·9	23·2	31·2
Aligarh	21·7	24·9	30·7	37·1	41·2	40·0	34·9	33·1	33·5	33·4	29·0	23·7	31·9
Agra	22·2	25·7	31·9	37·7	41·8	40·5	34·8	32·8	33·2	33·3	29·2	24·1	32·3
Mainpuri	22·7	26·0	32·5	38·5	42·2	40·9	35·0	33·1	33·7	34·0	30·0	24·8	32·8
Bareilly	22·7	24·9	31·0	37·0	40·5	39·0	33·8	32·6	33·0	32·3	28·4	23·8	31·5
Kanpur	22·8	26·0	32·7	38·3	41·7	39·9	33·7	32·1	32·7	32·7	28·9	23·3	32·2
Fatehpur	23·4	26·6	33·1	38·6	42·3	40·1	33·8	32·1	32·7	32·8	29·0	24·5	32·4
Allahabad	23·7	26·7	33·3	38·8	24·1	39·8	33·6	32·1	32·8	32·6	29·0	24·8	32·4
Jhansi	24·1	27·5	33·5	38·9	42·6	40·4	33·5	31·7	32·5	33·3	25·7	35·5	32·8
Banda	23·7	27·9	34·1	39·5	43·0	40·8	34·0	32·1	33·1	32·8	29·2	25·2	33·0
Varanasi	23·4	26·6	33·4	38·6	41·5	39·1	33·5	32·2	32·7	32·5	28·6	24·4	32·2
Gorakhpur	23·0	25·9	32·6	37·4	39·0	36·4	32·6	32·3	32·6	32·2	28·6	24·3	31·4
Azamgarh	23·3	27·2	33·3	39·1	41·4	38·5	33·0	32·5	31·9	32·7	29·5	25·5	32·3
Lucknow	23·3	26·4	32·9	38·3	41·2	39·3	33·6	32·5	33·0	32·8	29·3	24·8	32·3
Hardoi	22·1	26·1	32·0	37·9	41·1	39·5	33·6	32·5	33·1	32·2	28·9	24·4	32·0
Kheri	22·3	26·2	31·6	37·6	40·3	37·9	32·7	32·2	32·7	31·5	28·5	24·3	31·5
Gonda	22·9	25·7	32·3	37·6	39·9	37·4	32·9	32·2	32·5	32·1	28·6	24·3	31·5
Bahraich	22·6	25·6	31·9	37·4	39·8	37·6	33·0	32·2	32·7	32·1	28·6	24·3	31·5
Average	22·6	25·9	32·1	37·7	40·0	39·0	33·5	32·2	32·7	32·4	28·7	24·3	31·8

TABLE 8

Normals of Daily Minimum Temperature (°C)

Station	Jan	Feb	March	April	May	June	July	Aug	Sept	Oct	Nov	Dec	Annual
Dehradun	6·1	8·2	12·4	17·0	21·5	23·6	23·1	22·7	21·3	16·1	10·3	7·0	15·8
Meerut	7·9	9·8	15·0	20·2	24·8	27·4	26·4	25·7	24·3	18·5	11·3	8·1	18·3
Aligarh	7·6	9·9	14·9	20·6	26·3	28·4	26·7	25·7	24·5	19·0	12·1	8·3	18·7
Agra	7·4	10·3	15·7	21·6	27·2	29·5	27·0	25·8	24·6	19·1	12·0	8·2	19·0
Mainpuri	7·7	10·1	14·9	20·9	26·2	28·6	26·7	25·9	24·7	18·9	11·7	8·2	18·7
Bareilly	8·9	10·8	15·6	21·1	25·8	27·5	26·2	25·6	24·7	19·5	12·6	9·4	19·0

TABLE 8 (*Contd.*)

Normals of Daily Minimum Temperature (°C)

Station	Jan	Feb	March	April	May	June	July	Aug	Sept	Oct	Nov	Dec	Annual
Kanpur	8·6	11·0	16·3	22·0	27·2	28·7	26·6	25·8	24·9	19·6	12·3	8·5	19·3
Fatehpur	8·9	11·1	16·3	22·1	27·3	28·8	26·7	25·9	25·0	20·0	12·7	9·0	19·5
Allahabad	9·1	11·6	17·0	22·5	27·4	28·9	26·6	26·0	25·2	20·4	13·1	9·3	19·8
Jhansi	9·2	11·7	17·4	23·3	28·8	29·3	25·9	24·9	24·1	19·5	13·1	9·3	19·7
Banda	9·6	11·8	17·3	20·8	29·0	29·4	26·4	25·6	24·8	20·4	12·9	9·6	19·9
Varanasi	9·5	12·0	17·2	22·4	27·0	28·3	26·5	26·0	25·4	20·7	13·4	9·7	19·8
Gorakhpur	9·9	12·3	17·2	22·4	25·9	26·7	26·4	26·2	25·6	21·5	14·6	10·8	20·0
Azamgarh	9·7	11·5	17·0	21·9	27·1	27·3	26·1	26·1	25·3	21·0	13·3	9·5	19·9
Lucknow	8·9	11·5	16·3	21·8	26·5	28·0	26·6	26.0	25·1	19·8	12·7	9·1	19·4
Hardoi	8·5	10·7	15·8	20·6	25·3	27·6	26·6	26·1	25·1	19·9	12·3	9·1	19·0
Kheri	8·9	10·9	15·9	20·9	25·3	26·6	25·9	25·8	24·9	20·3	13·1	9·7	19·0
Gonda	8·3	10·5	15·4	21·0	25·6	26·9	26·2	25·9	24·9	20·0	12·6	8·8	18·8
Bahraich	8·8	10·9	15·4	20·9	25·6	27·0	26·3	26·1	25·1	20·7	13·4	9·4	19·1
Average	8·6	10·9	15·9	21·2	26·3	27·8	26·3	25·7	24·7	19·7	12·6	9·0	19·1

TABLE 9

Normals of Daily Mean Temperature (°C)

Station	Jan	Feb	March	April	May	June	July	Aug	Sept	Oct	Nov	Dec	Annual
Dehradun	12·6	14·8	19·4	24·6	28·9	29·5	26·8	26·1	25·5	22·2	17·5	14·0	21·8
Meerut	14·3	17·2	22·6	28·2	32·4	33·5	30·4	29·2	28·9	25·2	19·6	15·7	24·8
Aligarh	14·7	17·4	22·8	28·9	33·8	34·2	30·8	29·4	29·0	26·2	20·6	16·0	25·3
Agra	14·8	18·0	23·8	29·7	34·5	35·0	30·9	29·3	28·9	26·2	20·6	16·2	25·7
Mainpuri	15·2	18·1	23·7	29·7	34·2	34·8	30·9	29·5	29·2	26·5	20·9	16·5	25·8
Bareilly	15·3	17·9	23·7	29·1	33·2	33·3	30·0	29·1	28·9	25.9	20·5	16·6	25·3
Kanpur	15·7	18·5	24·5	30·2	34·5	34·3	30·2	29·0	28·8	26·2	20·6	16·4	25·8
Fatehpur	16·2	18·9	24·7	30·4	34·8	34·5	30·3	29·0	28·2	26·4	20·9	16·8	26·0
Allahabad	16·4	19·2	25·2	30·7	34·8	34·4	30·1	29·1	29·0	26·5	21·1	17·1	26·1
Jhansi	16·7	19·6	25·5	31·1	35·7	34·9	29·7	28·3	28·3	26·4	21·4	17·4	26·3
Banda	16·7	19·9	25·7	31·2	35·5	35·1	30·2	28·9	29·0	26·6	21·2	17·4	26·5
Varanasi	16·5	19·3	25·3	30·5	34·3	33·7	30·0	29·1	29·1	26·6	21·0	17·1	26·1
Gorakhpur	16·5	19·1	24·9	29·9	32·5	31·6	29·6	29·3	29·1	26·9	21·6	17·6	25·7
Azamgarh	16·5	19·4	25·2	30·5	33·8	32·9	29·6	29·3	28·6	26·9	21·4	17·5	26·0
Lucknow	15·2	17·9	23·8	29·4	33·4	33·2	29·8	29·0	28·9	25·5	19·6	15·7	25·1
Hardoi	15·3	18·4	23·9	29·3	33·2	33·6	30·1	29·3	29·1	26·1	20·6	16·8	25·5
Kheri	15·6	18·6	23·8	29·3	32·8	32·3	29·3	29·0	28·8	25·9	20·8	17·0	25·3
Gonda	15·6	18·1	23·8	29·3	32·8	32·2	29·6	29·1	28·7	26·1	20·6	16·6	25·2
Bahraich	15·7	18·3	23·7	29·2	32·7	32·3	29·7	29·2	28·9	26·4	21·0	16·9	25·4
Average	15·6	18·3	24·0	29·4	33·6	33·4	29·9	29·8	28·7	26·0	20·6	16·6	25·5

TABLE 10

Normal Monthly and Annual Potential Evapotranspiration (PE)

(mm)

Station	Jan	Feb	March	April	May	June	July	Aug	Sept	Oct	Nov	Dec	Annual
Kheri	46·7	71·2	120·9	167·5	191·7	181·9	120·0	119·8	123·2	109·3	65·1	43·8	1369·6
Bahraich	51·1	73·4	129·2	176·4	212·6	109·2	132·4	117·9	120·8	114·6	69·5	47·8	1435·5
Hordoi	60·3	77·7	131·3	174·9	214·7	200·0	141·8	126·8	133·3	114·2	69·5	48·8	1494·0
Gonda	51·8	74·8	134·6	177·9	206·5	183·3	128·4	116·5	119·5	112·8	68·8	47·4	1422·7
Lucknow	51·6	73·4	125·5	164·3	185·3	183·7	125·7	116·4	122·8	113·6	68·8	47·5	1379·1
Gorakhpur	53·5	76·5	135·5	177·2	207·2	171·1	130·6	119·3	116·1	114·7	71·8	50·2	1424·5
Kanpur	60·7	88·8	157·3	205·3	253·8	229·8	146·6	125·4	132·8	125·5	78·3	56·0	1660·9
Fatehpur	55·4	77·7	135·5	173·6	210·2	196·0	136·3	117·2	122·8	116·0	72·3	51·1	1464·5
Banda	54·4	77·9	130·2	167·2	210·3	195·1	136·8	121·0	128·0	115·0	70·2	50·1	1456·7
Varanasi	63·2	88·7	149·9	188·2	229·1	185·5	127·1	113·8	118·6	120·5	80·5	59·5	1525·2
Dehradun	37·9	55·6	96·6	134·2	168·9	162·1	112·3	102·3	103·5	91·5	52·2	35·3	1153·0
Roorkee	42·8	62·4	110·4	152·7	198·9	192·0	135·3	123·8	221·6	99·4	55·5	38·5	1333·8
Meerut	53·1	75·1	127·1	174·7	222·2	225·3	163·0	142·1	142·2	111·3	65·9	43·4	1545·9
Bareilly	48·8	70·6	124·7	166·5	208·5	196·0	129·4	115·5	122·6	110·1	64·2	45·3	1402·8
Aligarh	53·8	76·2	129·8	174·5	221·8	214·7	151·1	127·1	136·3	119·4	72·9	51·5	1529·8
Mainpuri	50·2	72·5	125·1	165·0	209·1	194·8	135·8	121·1	126·3	114·9	68·7	47·7	1431·7
Agra	52·9	75·2	126·4	162·6	208·3	204·4	145·8	123·9	132·9	116·1	68·7	49·7	1467·2
Orai	58·6	85·3	147·2	188·0	238·7	220·7	146·4	122·0	133·7	127·4	79·3	55·3	1603·3
Jhansi	63·5	84·9	138·3	172·3	215·1	201·1	136·5	116·3	127·0	122·8	79·1	58·6	1516·0

4 RAINFALL ZONES AND THEIR CROPPING AND LIVESTOCK PATTERNS

4.1 The State is divided into 14 Rainfall Zones. These are given below together with the taluks included in them and theoir total approximate area :

Rainfall zone	*Rainfall pattern*	*Number of taluks with total area in sq km*
I	$E_4(C_3E_1)\ E_4$	7 (5856)
II	$E_4(C_3\ D_1)E_4$	19 (17182)
III	$E_4(B_1\ C_2\ E_1)E_4$	8 (7800)
IV	$E_4(B_2\ C_1\ E_1)E_4$	87 (96391)
V	$E_4(B_2\ C_2)E_4$	8 (10498)
VI	$E_4(B_3\ C_1)E_4$	2 (2082)
VII	$E_4(B_3\ C_1)D_1\ E_3$	2 (2536)
VIII	$E_4(A_1\ B_1\ C_1\ E_1)E_4$	6 (9708)
IX	$E_4(A_1\ B_1\ C_2)E_4$	7 (5732)
X	$E_4(A_1\ B_2\ C_1)E_4$	16 (15758)
XI	$E_4(A_2\ C_1\ E_1)E_4$	12 (18141)
XII	$E_4(A_2\ C_2)E_4$	4 (6370)
XIII	$E_4(A_2\ B_1\ C_1)E_4$	14 (14027)
XIV	$E_4(A_2\ B_1\ C_1)D_1\ E_3$	17 (26016)

4.2 An introductory description of the rainfall zones is given below before taking up a detailed consideration of individual Zones :

(a) The zone with the largest number of taluks and the area has the pattern E_4 $(B_2\ C_1\ E_1)$ E_4. This includes 87 taluks constituting about 40 per cent of taluks in the state.

(b) The highest rainfall groups during June to September are $A_3 C_2$ or $A_2\ B_1C_1$. The zones with patterns beginning with A_2 cover a total of 47 taluks and with A_1, 29 taluks are covered.

(c) The patterns beginning with A,B,C and the number of taluks covered and zones to which they belong is as follows :

Pattern beginning with	*Number of taluks*	*Zone Number*
A	75	VIII to XIV
B	107	III to VII
C	26	I and II

Rainfall Zone I—E_4 $(C_3\ E_1)$ E_4

4.3 The districts, taluks and cropping patterns in the zones are :

Cropping pattern	*Taluk*	*District*
$W_3\ Ba_4\ G_4\ F_5\ B_4/_3K_4$	Mathura Mat Chhata	Mathura
$W_3\ G_4\ B_4\ Pu_4/F_5/D_4$	Sadabad Kiraoli	
$W_4\ G_4\ B_4\ D_4$	Kheragarh	
$B_5\ W_4\ G_4\ O_4$	Fatehabad	

4.4 The total area of the zone is 5856 sq km. The zonal average population density is higher than 300 and population density of individual taluks vary between 250 and 430.

4.5 The elevation of the zone ranges between 150 and 260 masl.

4.6 Land not available for cultivation is 6 to 10 per cent of reporting area. The net sown area is about 85 per cent in Mathura district and 75 to 85 per cent elsewhere.

4.7 Soils are mainly recent alluvial, Sixty five per cent of net sown area is irrigated in Mathura district and 35 to 50 per cent elsewhere.

4.8 This is the zone of lowest rainfall in the State with annual averages varying between 55 to 65 cm in 34 rainy days. July and August are the rainiest months and the two months accounting for 60 per cent of annual rainfall. Rainfall in June is 4.5 cm and in September 12 cm.

4.9 Wheat is the major crop of the zone followed by gram and bajra. The zone is covered by four cropping patterns, three beginning with Wheat and one with bajra. However, all the patterns have wheat, bajra, gram as common crops. Wheat occupies 30 to 35 per cent in all taluks except two. Area under bajra generally varies from 10 to 25 per cent and gram from 8 to 15 per cent. Fodder crops occupy 5 to 8 per cent of the cropped area and are included in one of the patterns to take the total area to 70 per cent. The patterns are :

Mathura	$W_3\,Ba_4\,G_4\,F_5\,B_4/Jk_4$
Mat	
Chhata	
Sadabad	$W_3\,G_4\,B_4\,Pu_4/F_5/O_4$
Kiraoli.	
Kheragarh	$W_4\,G_4\,B_4\,O_4$
Fatehabad	$B_4\,W_4\,G_4\,O_4$

4.10 Wheat is cultivated almost entirely under irrigated conditions and the relative yield indices are 121 and 120 in Mathura and Agra respectively. The yields of barley and bajra are above all-India level.

4.11 Female buffaloes account for 23 per cent of the total livestock of the zone followed by Youngstock buffaloes (15 per cent) and goats (15 per cent) in Agra. The livestock pattern for the zone is :

$$Bf_4\,Ey_4\,Cm_4\,Cf_4\,G_4/Cy_4$$

Rainfall Zone II—E_4 (C_3 D_1) E_4

4.12 The districts, taluks and cropping patterns included in the zone are as follows :

Cropping pattern	*Taluk*	*District*
$W_4\,Pd_4\,S_4\,F_4/M_4$	Makur	Saharanpur
$W_3\,S_4\,F_4/Pd_4/M_4$	Kairana	Muzaffarnagar
	Budhana	„
	Hapur	Meerut
	Baghpat	„
$W_4\,S_4\,F_4\,G_4/M_4/Pu_4$	Ghaziabad	„
$W_3\,S_4\,F_4\,M_4$	Sikandrabad	Bulandshahar
$W_3\,S_4\,M_4$	Bulandshahar	„
$W_4\,M_4\,B_4\,Pu_4\,Ba_4$	Khurja	„
$W_4\,M_4\,B_4\,Pu_4\,Ba_4/Pd_4/G_4$	Aligarh (Koil)	Aligarh
	Khair	„
	Sikandra Rao	„
$W_3\,B_4\,M_5\,Ba_5$	Iglas	„
	Hathras	„
$W_4\,B_4\,G_4\,Pu_4/Pd_4/M_4$	Sikohabad	Mainpuri
$W_4\,M_4\,B_4\,Pu_4/Pd_4$	Jalesar	Etah
$W_3\,G_4\,B_4\,Pu_4/_5/O_4$	Etmadpur	Agra
	Ferozabad	„
	Agra	„

4.13 The area of the zone is 17,182 sq km which represents 6 per cent of the State area. It covers 19 taluks in 8 districts. The taluks areas vary from 500 to 1300 sq km. In Agra, Mainpuri and Etah districts, taluk areas range from 500 to 760 sq km. The population is about 8.3 million with a population density of 484 persons per sq km. The individual taluks have density in the range of 300-650 per sq km excepting for Agra, which has the highest density of 1,543 per sq km.

4.14 The heights vary from 150 to 270 masl. The difference between maximum and minimum heights in the taluks are small and less than 25 m.

4.15 Land not available for cultivation is 10-20 per cent of the reporting area. The net sown area is 70-85 per cent in the zone.

4.16 Soils are recent alluvial with saline patches. Forty two per cent of area in Ermadpur is irrigated whereas in Agra and Ferozabad, area under irrigation is 60 per cent.

4.17 Wheat is the major crop of this zone covering about one third of the total cropped area. Sugarcane, Maize and fodder crops are other significant crops with average areas generally ranging between 10 to 30 per cent. Bajra and gram occupy less than 10 per cent of the area each. Paddy is significant in 2 taluks, the zonal average being 5 per cent. In the zone, all patterns begin with wheat as a dominant crop.

4.18 The Relative Yield Index values of crops in Agra district has been discussed in Zone I. Etah, Mainpuri and Saharanpur have only one taluk each in this zone, and hence their yields will be discussed when they appear in other zones. The Relative Yield Indices of the main crops in Muzaffarnagar, Meerut, Bulandshahar and Aligarh districts, are given in Table 11.

4.19 Wheat is grown under irrigated conditions and hence the yields are well above all-India level, but much less than those in the neighbouring States of Haryana and Punjab. Yield of maize which is moderately irrigated—40 per cent in Meerut and about 60 per cent elsewhere are close to all-India level. Bajra yields are rather low except in Aligarh. Gram yields are 1.3 to 1.5 times of all-India and that of total pulses about twice the all-India average, except in Muzaffarnagar. The yields of barley are rather low. Paddy yields are slightly better in Muzaffarnagar and Meerut, where the crop is 70 to 80 per cent irrigated whereas in Aligarh and Bulandshahar with only 50 per cent of the area under irrigation, it is low. Sugarcane yields in Meerut and Muzaffarnagar are close to all-India level, while in the rest, the yields are considerably lower.

4.20 Female buffaloes constitute about 26 to 28 per cent of livestock in Bulandshahar, Meerut and Aligarh districts followed by male cattle and hence the pattern in these three districts is Bf_4 Cm_4. In Muzaffarnagar district, number of male cattle is highest with 26 per cent followed by female buffaloes, young buffaloes and female cattle and hence the livestock pattern for this district is Cm_4Bf_4 By_4 Cf_4/Cy_4.

TABLE 11

Relative Yield Index of Principal Crops in Zone II

District	Wheat	Maize	Sugarcane	Bajra	Paddy	Groundnut	Total pulses	Barley
Muzaffarnagar	121	93	99	47	93	130	162	—
Meerut	132	114	91	58	94	137	198	84
Bulandshahar	132	121	74	93	79	147	188	96
Aligarh	157	98	62	181	71	149	205	134

NOTE : The Relative Yield Index represents the district yield expressed as percentage of the corresponding all India average yield for 1968-69 to 1970-71.

Rainfall Zone III—E_4 (B_1 C_2 E_1) E_4

4.21 The districts, taluks and the cropping patterns in the zone are :

Cropping pattern	*Taluk*	*District*
W_4 M_4 S_4 Pu_5	Anupshahr	Bulandshahr
W_3 B_4 M_4 Gn_4 Pu_4/G_5	Gunnaur	Badaun
W_4/M_4 B_4 Pu_4/Pd_4	Atrauli	Aligarh
	Etah	Etah
W_4 B_4 G_4 $Pu_4/Pd_4/M_4$	Jasrana	Mainpuri
W_4 Pd_4 M_4 $G_4/_5/B_5$	Mainpuri	,,
	Bhangaon	,,
	Karhal	,,

4.22 The area of the zone is 7,800 sq km Karhal taluk is 565 sq km in area and all the other taluks range between 800 and 1250 sq km The population is 2.7 million with an average population density of 344.

4.23 The elevation ranges between 150—200 masl.

4.24 Land not available for cultivation on an average is 16 per cent of the reporting area, though in some of the individual taluks, it is much higher (average for Mainpuri taluk is 30 per cent). The net sown area varies between 55 and 80 per cent the zonal average being 68 per cent of the area.

4.25 Soils are recent alluvial with saline patches. Irrigation ranges from 60 to 80 per cent except in Gunnaur which has only 20 per cent of area under irrigation.

4.26 The average annual rainfall is about 70 cm in 37 rainy days. July and August are the rainiest months though the latter has slightly higher rains. These two months account for 60 per cent of the annual rainfall. September month also gets more than 10 cm rainfall.

4.27 Wheat is the principal crop of the zone, occupying 25 per cent of the total cropped area. Bajra, Maize, other pulses and paddy are the other important crops. The zone has five cropping patterns, all beginning with wheat. The patterns are :

Pattern	*Taluk*
W_4 M_4 S_4 Pu_5	Anupshahr
W_3 B_4 M_4 Gn_4 Pu_4/G_5	Gunnaur
W_4 M_4 B_4 Pu_4/Pd_4	Atrauli Etah
W_4 B_4 G_4 $Pu_4/Pd_4/M_4$	Jasrana
W_4 Pd_4 M_4 $G_4/5/B_5$	Mainpuri
	Bhangaon
	Karhal

4.28 The Relative Yield Index of crops in Mainpuri district, in which four taluks are included, is given in Table 12. Rice yield is lower than all-India level which appears to be chiefly due to the inadequacy of rainfall. The yields of all other crops are good.

4.29 The livestock pattern of Mainpuri district which is dominated by female buffaloes has the form :—

Bf_4 By_4 Cm_4 G_4 Gy_4 G_4 Cf_4 S_4

TABLE 12

Relative Yield Index of Principal Crops in Mainpuri district

Crop	Relative Yield Index (Per cent)
rice	84
bajra	153
maize	111
wheat	126
barley	126
gram	133
tur	198
groundnut	100
sugarcane	89

NOTE: The relative yield index represents the district yield expressed as percentage of the corresponding all-India average yield for 1968-69 to 1970-71.

Rainfall Zone IV—$E_4(B_2\ C_1\ E_1)\ E_4$

4.30 The districts, taluks and the cropping patterns included in the zone are :

Cropping pattern	*Taluk*	*District*
$W_3 S_4 F_4/Pd_4$	Deoband	Saharanpur
$W_4 Pd_4 S_4 F_4/M_4$	Roorkee	,,
	Saharanpur	,,
	Bijnor	Bijnor
$S_3 W_4 F_4$	Muzaffarnagar	Muzaffarnagar
	Jansath	,,
$W_3 S_4 F_4/M_4/Pd_4$	Mawana	Meerut
	Sardhana	,,
$W_4 S_4 F_4 G_4/M_4/Pu_4$	Meerut	,,
$W_3 Pd_4 S_4 G_4/F_4/B_4$	Moradabad	Moradabad
	Amroha	,,
$W_3 Pd_4 B_4 S_4$	Bilari	,,
$W_3 M_4 S_4 Pd_5 B_4/Gn_4$	Hasanpur	,,
	Sambhal	,,
$W_4 Pd_4 S_4 G_4$	Shahabad	Rampur
$W_3 B_4 M_4 Gn_4 Pu_4/G_4/_5$	Badaun	Budaun
	Sahaswan	,,
	Bisauli	,,
$W_4 Pd_4 G_4 Pu_5 S_5/B_5$	Dataganj	,,
$W_4 B_4 G_4 Gn_4 Pu_5 M_5$	Aonla	Bareilly
$W_4 Pd_4 G_4 S_4$	Tilhar	Shahajanpur
$W_4 Pd_4 G_4 Pu_5 S_5/B_5$	Jalalabad	,,
$W_4 B_4 M_4 Pu_4$	Kasganj	Etah
$W_4 B_4 M_4 Gn_5 G_5/Pd_5 Pu_5$	Aliganj	,,
$W_3 M_4 G_5 V_4/V_2 B_5$	Farrukhabad	Farrukhabad
	Kaimganj	,,
$W_4 M_4 Pd_4 G_4$	Chhibramau	,,
$W_4 M_4 Pd_4 Gn_4 Ba_4/G_4$	Kannauj	,,
$W_3 Pd_4 Gn_4/S_4$	Shahabad	Hardoi
$W_4 Pd_4 G_4 Gn_4 Ba_4$	Hardoi	,,
$W_4 Gn_4 G_4 Ba_4 M_4/Pd_4$	Bilgram	,,
	Sandila	
$B_4 G_4 T_4$	Bah	Agra
$W_4 B_4 M_4 Pd_4 G_4$	Etawah	Etawah
	Bharthana	,,
$W_4 Pd_4 B_4 M_4$	Bidhuna	
$W_4 B_4 Pd_4 G_4 M_4/O_4/Ba_4$	Auraiya	,,
$G_3 W_3$	Konch	Jalaun
	Orai	,,
$G_3 W_4 B_4/Jk_4/T_4$	Jalaun	,,
	Kalpi	,,
$W_4 Pd_4 Ba_4 G_4/Jk_4/M_4/M_4B_4$	Bilhaur	Kanpur
	Kanpur	,,
	Akbarpur	,,
$W_4 B_4 Pd_4 G_4 M_4/O_4/M_4Ba_4$	Derapur	,,
$G_4 W_4 Pd_4 Ba_4 Jk_4/B_4/T_4$	Bhognipur	,,
	Ghatampur	,,
$Pd_4 W_4 Ba_4 Jk_4$	Purwa	Unnao
$W_4 Pd_4 Ba_4 G_4 Jk_4/M_4$	Unnao	,,
$W_4 Pd_4 G_4 Ba_4 Jk_4/M_4$	Hasanganj	,,
	Safipur	,,
	Malihabad	Lucknow
$W_4 Pd_4 G_4 B_5 S_5 Jk_5$	Lucknow	,,
	Mohanlalganj	,,
$Pd_3 W_4 G_4$	Fatehpur	Barabanki
$Pd_3 W_4 G_4 Pu_5$	Haidargarh	,,
$W_4 Pd_4 M_4 S_5$	Biswan	Sitapur
$W_4 Pd_4 G_4 S_5$	Sidhauli	Sitapur
$Pd_3 W_4 G_4 Pu_5$	Musafirkhana	Sultanpur
$Pd_3 W_4 Ba_4 Pu_4/G_4/M_4$	Amethi	,,
	Sultanpur	,,
$Pd_3 W_4 G_4/Ba_4/Pu_4$	Akbarpur	Faizabad
$Pd_3 W_4 Ba_4 Pu_4/Jk_4$	Salon	Rae Bareil
$Pd_3 W_4 G_4 Pu_5$	Maharajganj	,,
$Pd_4 W_4 Ba_4 Jk_4/Pu_4/G_4$	Rae Bareli	,,
	Dalmau	,,
$Pd_4 W_4 Ba_4 G_4$	Fatehpur	Fatehpur
	Khaga	,,
$G_4 W_4 Ba_4 Pd_4 Jk_4$	Bindki	,,
$G_3 W_3$	Maudaha	Hamirpur
$G_3 W_4 Jk_4/T_4$	Mahoba	,,
	Charkhari	,,
	Rath	,,
	Hamirpur	,,
	Garautha	Jhansi
	Mauranipur	,,
$G_3 W_3$	Moth	,,
$G_4 Pd_4 Ba_4 B_4$	Allahabad	Allahabad
	(Chail)	,,
	Sirathu	,,
	Manjhanpur	,,
$Ba_4 Pd_4 W_4 B_4 G_4$	Phulpur	,,
$Pd_4 W_4 B_4 Ba_4 Pu_5/G_4$	Soraon	,,
	Karchhana	,,
$G_4 Jk_4 B_4 T_4$	Mau	Banda
$Pd_3 W_4 Ba_4 M_4$	Machhlishahr	Jaunpur
$Pd_4 W_4 Ba_4 M_4$	Mariahu	,,
	Shahganj	Jaunpur

4.31 This is the biggest of the rainfall zones covering 87 taluks in 29 districts. Ten districts are fully included whereas thirteen districts have more than half of their taluks included and the remaining six districts have only one taluk each included in the zone.

4.32 The area of the zone is 96,391 sq km which is about 40 per cent of the reporting area of the State (Plains). The areas of taluks range between 430 and 1,670 sq km. The population of the zone is 33.5 million with an average population density of 347. More than 60 per cent of the taluks have population density exceeding 300 persons. The population density is highest in Lucknow, Kanpur and Meerut, the average population density in these taluks exceeding 1,000. Only in 10 taluks, the population density ranges from 100 to 150.

4.33 The taluks of Saharanpur district show large height variations from 250 to 950 masl. In Jhansi and Hamirpur areas, the range of elevations is 150 to 400 masl. The taluks in the rest of the zone, show small differences of an order of a few tens of metres between maximum and minimum elevations.

4.34 Forests are negligible, the zonal average being 2 per cent. Land not available for cultivation is more than 15 per cent in as many as 24 taluks, but the zonal average is 14 per cent. Cultivable waste and fallow lands are 5 to 6 per cent each. The net sown area occupies 71 per cent of the reporting area.

4.35 Over almost the entire zone except in the extreme north and south, alluvial soils prevail. Only 18 taluks have more than 50 per cent of net sown area under irrigation. Muzzafarnagar and Meerut areas are well irrigated. The percentage of net area irrigated are as follows :

Per cent	*Less than 10*	10—30	31—50	51—70	71—90	*Total*
number of taluks	3	25	41	13	5	87

4.36 The annual rainfall in the zone varies widely from 70 to 100 cm. The lower rainfall is mainly in the eastern taluks which number 18. July and August are the rainiest months. In Kanpur, Jalaun, Hamirpur, Etawah etc, rainfall in August is slightly higher than July. July and August account for 60 per cent of annual rainfall. September rainfall is generally between 15 to 20 cm and June rainfall is in class 5 to 10 cm. This is a zone of moderate rainfall.

4.37 The cropped area of the zone is 8.6 million ha accounting for 40 per cent of the total cropped area of the State. Wheat is the major crop occupying 25 per cent of cropped area. All the pulses together occupy the same area. Paddy and gram each occupy 14 per cent of the cropped area. Barley, maize, jowar and sugarcane occupy small areas of 5 to 6 per cent each. The zone has 36 cropping patterns which is about half the total number for the entire state. Patterns beginning with wheat are the maximum with twenty three followed by five patterns beginning with paddy and five with gram. The patterns are indicated below :

	Pattern	*Taluk*
1	$Pd_3\ W_4\ G_4/Ba_4/Pu_4$	Fatehpur Akbarpur
2	$Pd_3\ B_4\ G_4$ Pu5	Musafirkhana Maharajganj Haidargarh
3	$Pd_3\ W_4\ Ba_4\ Pu_4/G_4/Mt_4/Jk_4/M_4$	Amethi Sultanpur Salon Machhlishahr
4	$Pd_4\ W_4\ Ba_4\ Jk_4/Pu_4/G_4/M_4$	Purwa Rae Bareli Dalmau Fatehpur Khaga Marishu Shahganj
5	$Pd_4\ W_4\ B_4\ Ba_4\ Pu_5/G_4$	Soraon Karchhana
6	$W_3\ Pd_4\ Gn_4/S_4$	Shahbad (Hardoi)
7	$W_3\ Pd_4\ S_4\ G_4/F_4/B_4$	Moradabad Amroha Bilari
8	$W_4\ Pd_4\ S_4\ F_4/M_4/G_4$	Roorkee Shahbad(Rampur) Tilhar Saharanpur Bijnor
9	$W_4\ Pd_4\ G_4\ S_5$	Sidhauli
10	$W_4\ Pd_4\ G_4\ Pu_5\ S_5/B_5$	Dataganj Jalalabad
11	$W_4\ Pd_4\ M_4\ S_5$	Biswan
12	$W_4\ Pd_4\ B_4\ M_4$	Bidhuna
13	$W_4\ Pd_4\ Ba_4\ G_4\ Jk_4/M_4/M_4/B_4$	Bilhaur Kanpur Akbarpur Unnao Hasanganj Safipur Malihabad
14	$W_4\ Pd_4\ G_4\ B_5\ S_5\ Jk_5$	Lucknow Mohanlalgan
15	$W_4\ B_4\ Pd_4\ G_4\ M_4/O_4/Ba_4$	Auraiya
16	$W_3\ B_4\ M_4\ Gn_4\ Pu_4/G_4/_5$	Budaun Sahaswan Bisauli
17	$W_4\ B_4\ G_4\ Gn_4\ Pu_5\ M_5$	Aonla
18	$W_4\ B_4\ M_4\ Pu_4$	Kasganj
19	$W_4\ B_4\ M_4\ Gn_5\ G_5/Pd_5\ Pu_5$	Aliganj
20	$W_4\ B_4\ M_4\ Pd_4\ G_4$	Etawah Bharthana
21	$W_4\ B_4\ Pd_4\ G_4\ M_4/O_4/(M_4\ Ba_4)$	Derapur
22	$W_3\ M_4\ G_5V_4/V_5B_5$	Farrukhabad Kaimganj
23	$W_3\ M_4\ S_4\ Pd_4\ B_4/Gn_4$	Hassanpur Sambhal
24	$W_4\ M_4\ Pd_4\ G_4$	Chhibramau
25	$W_4\ M_4\ Pd_4\ Gn_4\ Ba_4/G_4$	Kannauj
26	$W_3\ S_4\ F_4/Pd_4/M_4$	Deoband Mawana Sardhana
27	$W_4\ S_4\ F_4\ G_4/M_4/Pu_4$	Meerut
28	$W_4\ Gn_4\ G_4\ Ba_4\ M_4/Pd_4$	Hardoi Bilgram Sandila
29	$G_3\ W_3$	Maudaha Konch Orai Moth
30	$G_3\ W_4\ B_4/Jk_4/T_4$	Jalaun Kalpi Mahoba Charkhari Rath Hamirpur Garautha Maurampur
31	$G_4W_4Pd_4\ Ba_4\ Jk_4/B_4/T_4$	Bhognipur Ghatampur Bindki

Pattern	*Taluk*
32. G_4 Pd_4 Ba_4 B_4	Allahabad (Chail) Sirathu Manjhanpur
33. G_4Jk_4 B_4 T_4	Mau
34. B_4 G_4 T_4	Bah
35. S_3 W_4 F_4	Muzaffarnagar Jansath
36. Ba_4 Pd_4 W_4 B_4 G_4	Phulpur

4.38 Paddy yields range from 50 to 90 per cent of all India level. Yield of wheat in the various districts ranged from 75 to 127 and they are close to all-India level.

4.39 Gram yields are generally above all-India ranging between 130 and 140. Tur yields are high and in few districts they are double the all-India average. The yields of pulses jowar and maize in the zone are generally well above all-India level. Sugarcane yields are generally between 65 and 85 per cent of all-India level.

4.40 In Etawah, Farrukhabad, Kanpur and Fatehpur areas, goats dominate and together with cattle accounts for more than 70 per cent of the livestock population. The livestock patterns in the districts are as follows :

Pattern	*District*
Cm_3 Cf_4 Cy_4 G_4 Bf_4	Sultanpur
Cm_3 Cf_4 Cy_4 G_4 S_4 Bf_4	Jaunpur
Cm_4 Cf_4 Cy_4 $G_4/Bf_4/S_4$	Allahabad Lucknow Unnao Rae Bareli Hamirpur
Cm_4 Cf_4 Cy_4 Bf_4	Saharanpur
Cm_3 Bf_4 By_4 Cy_4 Cy_4	Moradabad Budaun
G_4 Cm_4 Bf_4 By_4	Farrukhabad
G_4 Bm_4 Bf_4 By_4 Cy_4 Cm_4	Etawah
G_4 Cm_4 Cf_4 Cy_4 Bf_4	Kanpur Fatehpur

Rainfall Zone V—E_4 (B_2 C_2) E_4

4.41 The districts, taluks and the cropping patterns included in the zone are given below :

Cropping Pattern	*Taluk*	*District*
Pd_3 Ba_4 Pu_4 $W_4/S_4/_5/T_5$	Ghosi Sagri	Azamgarh
Pd_3 Ba_4 Pu_4	Mohammadabad	
Pd_4 W_4 S_4 G_4/M_4	Lakhimpur Mahamdi	Lakhimpur
W_4 Pd_4 G_4 $S_4/Gn_4/Ba_4$	Sitapur Misrikh	Sitapur
Pd_4 W_4 Ba_4 G_4	Zamania	Ghazipur

4.42 The area of the zone is 10,500 sq wm. Area of taluk ranges from 160 sq km. 2380 sq km. The population of the zone is 3.8 million with an average population density of 362. The population density of individual taluks varies between 250 and 579.

4.43 The elevation in the zone ranges between 75 and 165 masl.

4.44 Land not available for cultivation is 11 per cent and fallow lands account for 7 per cent of the reporting area. Net sown areas varies from 70 to 80 per cent with zonal average being 75 per cent.

4.45 Soils are recent alluvial with saline patches. About 50 per cent of Azamgarh area is irrigated whereas only 15 to 30 per cent of area is under irrigation in the rest of the zone.

4.46 The annual average rainfall is about 100 cm in 45 to 50 rainy days. July and August are the rainiest months, July rainfall being slightly higher than August and the rainfall in these two months accounts for about 55 per cent of the annual. The entire monsoon season, June to September, accounts for 85 to 90 per cent of annual rainfall.

4.47 The main crops grown are paddy, wheat and gram, Area under paddy in the zone is 23 per cent with areas in Azamgarh taluks ranging between 30 and 40 per cent of the cropped area. Barley is an important crop in Azamgram taluks covering 10 to 20 per cent area. Wheat occupies 17 per cent and Gram 10 to 20 per cent in other districts. Sugarcane is grown on 10 to 20 per cent area in Lakhimpur Mahamdi and Sitapur taluks. Groundnut is grown in 21 per cent area and wheat on 20 per cent area in Misrikh taluk. The zone has five patterns, paddy dominating in four and wheat in one. These are as follows :

Pattern	*Taluk*
Pd_3 Ba_4 Pu_4	Mohammadabad
Pd_3 Ba_4 Pu_4 $W_4/S_4/_5/T_4$	Ghosi Sagri
Pd_4 W_4 Ba_4 G_4	Zamania
Pd_4 W_4 S_4 G_4/M_4	Lakhimpur Mahamdi
W_4 Pd_4 G_4 S_4/Gn_4 Ba_4	Sitapur Misrikh

4.48 The Relative Yield Indices of crops grown in Azamgarh, Lakhimpur and Sitapur districts are given in Table 13. Rice yield are low because rainfall distribution of 20-30 cm pm for two months only during July and August is not adequate for the crop. Though wheat is grown under irrigated conditions in Azamgarh, yield is low. Yields of pulses are good. Barley yields in Azamgarh and Sitapur area are close to all-India level.

4.49 Cattle and goats account for more than 70 per cent of the total livestock. Male cattle are larger in number than the rest. In Azamgarh district, male cattle are one-third of the total livestock. There are two patterns in the zone. The livestock patterns are :—

Cm_3 Cf_4 Cy_4 G_4	Azamgarh
Cm_4 Cf_4 Cy_4 G_4	Sitapur Lakhimpur

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TABLE 13

Relative Yield Index of Principal Crops in Zone V

District	Rice	Wheat	Barley	Gram	Tur	Total pulses	Sugarcane
Azamgarh	55	96	102	123	121	167	75
Lakhimpur	56	71	72	116	135	132	70
Sitapur	60	81	106	146	135	168	75

NOTE : The Relative Yield Index represents the district yield expressed as percentage of corresponding all-India average yield for 1968-69 to 1970-71.

Rainfall Zone VI—E$_4$ (B$_3$ C$_1$) E$_4$

4.50 The district, taluks and the cropping patterns in the zone are :

Cropping pattern	*Taluk*	*District*
Pd$_3$ Ba$_4$ Pu$_4$ W$_4$/S$_5$/M$_4$	Rasra	Ballia
Pd$_4$ W$_4$ Ba$_4$ M$_4$ G$_4$	Bansdih	

4.51 The total area of the zone is 2,082 sq km and the taluk areas range between 1,000 and 1,100 sq km. The population is nearly a million with an average population density of about 460.

4.52 The elevation ranges between 60 and 75 masl.

4.53 Land not available for cultivation is 9 to 15 per cent of reporting area. Net sown area is 76 per cent.

4.54 Nearly 30 to 45 per cent of the area is irrigated. The soils are recent alluvial.

4.55 The annual rainfall is about 100 cm in 52 rainy days. July and August are the rainiest months, constituting 50 per cent of total. July and August get 28-30 cm pm with September 20 cm and June 11 cm rainfall. Winter rainfall during January to March is 4 cm.

4.56 Paddy is the main crop with a zonal average of 29 per cent. Areas under other crops are barley 17 per cent, pulses 13 per cent, wheat 10 per cent and sugarcane 10 per cent. The zone has following two patterns, both beginning with paddy : --

Pd$_3$ Ba$_4$ Pu$_4$ W$_4$/S$_5$/M$_4$	Rasra
Pd$_4$ W$_4$ Ba$_4$ M$_4$G$_4$	Bansdih

4.57 The Relative Yield Indices of the crops in the zone are given in Table 14. Wheat though irrigated to the extent of 60 per cent only, the yield is slightly higher than all-India. Pulse yields are good. Sugarcane yield is close to all-India and maize yields low.

4.58 Male cattle are predominant with 25 per cent of the total livestock, Cattle and goats constitute more than 70 per cent of the livestock population. The livestock patterns is :

Cm$_4$ Cf$_4$ Cy$_4$ G$_4$.

TABLE 14

Relative Yield Index of Principal Crops in Zone VI

Crops	(Per cent)
rice .	62
maize	68
small millets	157
wheat	108
barley	110
gram	149
tur	121
total pluses	174
sugarcane	95

NOTE : The Relative Yield Index represents the district yield expressed as percentage of the corresponding all-India average yield for 1968-69 to 1970-71.

Rainfall Zone VII—E$_4$ (B$_3$ C$_1$) D$_1$ E$_3$

4.59 The district, taluks and the cropping patterns in the zone are :

Cropping pattern	*Taluk*	*District*
Pd$_4$ W$_4$ Ba$_4$ Mt$_4$	Salempur Deoria	Deoria

4.60 The total area of the zone is 2,536 sq km. It has a population of 1.4 million with a population density of 561. The elevation is 75 to 80 masl.

4.61 Land not available for cultivation is 6 to 12 per cent of reporting area. Net sown area is about 85 per cent of the area.

4.62 Soils are recent alluvial and 60 per cent of the area is irrigated.

4.63 The annual rainfall is about 100 cm in 50 rainy days July and August are the rainiest months and contribute 50 per cent to total rainfall. The month of September gets more than 20 cm June has about 13 cm and October 5-6 cm rainfall. This is a zone of moderately good and well distributed rainfall.

4.64 Rice area is a quarter of the total cropped area. Wheat, barley and small millets are each 10-20 per cent in area. The cropping pattern is :
Pd$_4$ W$_4$ Ba$_4$ Mt$_4$.

4.65 The Relative Yield Indices of crops grown in the zone are given in Table 15. Yield of rice, wheat, barley is quite low. It is interesting to observe that sugarcane yield is the same as the State average and close to all-India, though the crop is irrigated to a limited extent only.

4.66 Male cattle constitute 33 per cent and goats 25 per cent of total live-stock. Female cattle and young stock cattle are 12 per cent each. The pattern is Cm_4 G_4 Cf_4/Cy_4.

TABLE 15

Relative Yield Index of Principal Crops in Zone VII

Crop	(Per cent)
rice .	67
wheat	87
barley	80
small millets	167
total pulses	157
sugarcane	85

NOTE : The Relative Yield Index represents the district yield expressed as percentage of the corresponding all-India average yield for 1968-69 to 1970-71.

Rainfall Zone VIII—E_4 (A_1 B_1 C_1 E_1) E_4

4.68 The districts, taluks and the cropping patterns in this zone are :

Cropping pattern	*Taluk*	*District*
W_3 M_4 Jk_4 G_4 Pu_4	Jhansi	Jhansi
W_3 Jk_4 Mt_4	Lalitpur Mahroni	Pratapgarh
Pd_3 W_4 Ba_4 Pu_4	Kunda Patti	
Pd_4 W_4 Ba_4 Pu_4 B_4 G_4	Belha (Pratapgarh)	

4.69 The total area of the zone is 9,708 sq km. The areas of all taluks exceed 1,000 sq km. Areas of Mahroni and Lalitpur are more than 2,000 sq km. Population of Pratapgarh district is 1.4 million with average population density close to 400. Lalitpur and Mahroni taluks have population density less than 100 as compared to Jhansi, with population density of 295.

4.70 Jhansi area is having an elevation of 300 masl to 550 masl. Pratapgarh area elevation is 100 masl.

4.71 Lalitpur has 14 per cent of reporting area under forest but forest area is negligible elsewhere. Land not available for cultivation is about 10 per cent in Jhansi and 15 per cent in Pratapgarh. Cultivable waste is 30 to 40 per cent in Jhansi area and 5 per cent in Pratapgarh district. Net sown area in Jhansi district is 30 to 40 per cent and in Pratapgarh district about 70 per cent.

4.72 The soils are recent alluvial in Pratapgarh district and medium black in Jhansi. Taluks in Pratapgarh district and Jhansi taluk have 40 per cent area under irrigation, whereas in the rest of the area, irrigation ranges from 10 to 20 per cent.

4.73 Annual rainfall is of the order of 100 cm and July and August together contribute more than 60 per cent of this rainfall. Rainfall in other months is generally small and negligible.

4.74. Though Rainfall is the same in Jhansi and Pratapgarh areas, their cropping patterns differ significantly. In Jhansi area, wheat is cultivated on one third of total area, whereas rice dominates Pratapgarh district in the east. The other significant crops are wheat, barley and other pulses. In Pratapgarh taluk, paddy and barley each occupy 17 per cent area. The patterns are the following :

Pattern	*Taluk*
W_3 Jk_4 Mt_4	Lalitpur Mahroni
W_3 M_4 Jk_4 G_4 Pu_4	Jhansi
Pd_3 W_4 Ba_4 Pu_4	Kunda Patti
Pd_4 W_4 Ba_4 Pu_4 B4 G_4	Belha (Pratapgarh)

4.75 The Relative Yield Index values of the crops in Pratapgarh and Jhansi districts are given in Table 16. Wheat yields are low though the crop is irrigated to the extent of 80 per cent. Rice yields are hardly 60 per cent of all-India level.

4.76 Cattle and goats together account for 70 per cent of the total livestock. The livestock patterns in these districts are :

Pattern	*District*
Cm_3 Cf_4 Cy_4 G_4	Pratapgarh
Cm_4 Cf_4 Cy_4 G_4	Jhansi

TABLE 16

Relative Yield Index of Principal Crops in Zone VIII

Crop	Pratapgarh	Jhansi
rice .	55	61
wheat	86	76
barley	94	—
bajra	166	—
gram	111	99
total pulses	166	124
small millets	—	156
jowar	—	112

NOTE : The Relative Yield Index represents the district yield expressed as percentage of the corresponding all-India average Yield for 1968-69 to 1970-71.

Rainfall Zone IX—E_4 (A_1 B_1 C_2) E_4

4.77 The districts, taluks and the cropping patterns in the zone are :

Cropping pattern	*Taluk*	*District*
W_4 Pd_4 S_4 Gn_4/G_5-Pu_5	Bareilly Faridpur	Bareilly
W_4 Pd_4 S_4 G_4	Powayan	Shahjahanpur
W_4 Pd_4 G_4 Pu_5 S_5/B_5	Shahjahanpur	
W_4 Pd_4 M_4 G_4	Rampur Milak Suar	Rampur

4.78 The area of the zone is 5,732 sq km. The areas of Faridpur and taluks in Rampur district range between 400 and 650 sq km each, whereas areas of rest of the taluks vary between 1,000 and 1,500 sq km. The population is 2.3 million with a population density of 409. The population density in taluks varies from 117 in Powayan to over 700 in Rampur and Bareilly.

4.79 The elevation in the zone is 150 to 200 masl.

4.80 Land not available for cultivation is 11 per cent and fallow lands 5 per cent of the reporting area. Net sown area is 75 to 80 per cent, except in Powayan where it is 66 per cent only.

4.81 Irrigation is negligible in Milak, Irrigated area is 15 to 20 per cent in Powayan, Rampur and Suar, and 40 per cent elsewhere. Soils are recent alluvial.

4.82 The annual rainfall of the zone is 100 to 110 cm with 60 per cent of the total rainfall occurring during July and August. July gets 30 to 32 cm, August 29 cm and September 20 cm rainfall. June rainfall is between 11 and 15 cm. This is a zone of moderately good rainfall.

4.83 Wheat is the major crop of the zone, occupying above 26 per cent area followed by rice, gram and sugarcane. All the patterns of the zone have wheat and paddy (W_4 Pd_4) as common crops. Two or more of gram, sugarcane, maize, other pulses and groundnut crops appear in the patterns which are shown below :

Pattern	*Taluk*
W_4 Pd_4 S_4 $Gn_4/G_5/Pu_5$	Barielly
	Faridpur
W_4 Pd_4 S_4 G_4	Powayan
W_4 Pd_4 G_4 $Pu5/S5/B_5$	Shahjahanpur
W_4 Pd_4 M_4 G_4	Rampur
	Milak
	Suar

4.84 The Relative Yield Index Values of the main crops of the zone are given in Table 17. Yields of wheat, rice and Maize are rather low. Yields of pulses are on the whole satisfactory. Sugarcane yield is about the same as State average.

4.85 Male cattle form 30 per cent of the total livestock population. The other classes of livestock are female and youngstock of cattle, female and youngstock of buffaloes and goats. The zone has following two patterns :

District	*Pattern*
Rampur	Cm_3 Bf_4 By_4 Cf_4 Cy_4
Bareilly Shahjahanpur	Cm_4 Cf_4 Cy_4 G_4 Bf_4

TABLE 17

Relative Yield Index of Principal Crops in Zone IX

District	Wheat	Rice	Sugarcane	Gram	Total Pulses	Bajra	Maize
Rampur	126	75	85	125	160	73	90
Bareilly	84	73	83	95	132	144	83
Shahjahanpur	86	78	78	103	141	114	83

NOTE : The Relative Yield Index represents the district yield expressed as percentage of the cprresponding all India average Yield for 1968-69 to 1970-71.

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Rainfall Zone X—E_4 (A_1 B_2 C_1) E_4

The zone has 16 taluks in eight adjoining districts. Ballia, Basti and Sultanpur districts have each only one taluk. About half the taluks of Ghazipur, Jaunpur, Azamgarh, Faizabad and Barabanki are in this zone.

4.86 The distircts, taluks and their cropping patterns in the zone are :

Cropping pattern	*Taluk*	*District*
Pd_3 W_3 G_4 Pu_5	Nawabganj	Barabanki
Pd_3 W_4 $G_4/Ba_4/Pu_4$	Ramsanehighat	,,
	Faizabad	Faizabad
	Bikapur	,,
	Tanda	,,
Pd_3 Ba_4 Pu_4 $W_4/S_4/5/T_4$	Phulpur	Azamgarh
	Azamgarh	,,
Pd_3 Ba_4 Pu_4	Lalganj	,,
Ba_4 M_4 Pd_4 W_4	Jaunpur	Jaunpur
	Kerakat	,,
Pd_4 Ba_4 W_4 B_4 Pu_5	Saidpur	Ghazipur
Pd_4 W_4 Ba_4 Pu_4/G_4	Ghazipur	,,
Pd_4 W_4 Ba_4 G_4 Pu_4	Mohammadabad	Ghazipur
G_4 W_4 Pd_4 Ba_4 M_4/Pu_4	Ballia	Ballia
Pd_3 W_4 Pu_4 $/Ba_4$	Haraiya	Basti
Pd_3 W_4 Ba_4 $Pu_4/G_4/M_4$	Kadipur	Sultanpur

4.87 The area of the zone is 16,000 sq km. Seven taluks have areas ranging between 1000 and 1500 sq km and the rest between 600 and 1000 sq km.

4.88 The zone has a maximum elevation of less than 100 masl except in Barabanki and Faizabad areas where the elevations range from 100 to 180 masl.

4.89 Land not available for cultivation ranges from 10 to 20 per cent, the zonal average being 14 per cent of the reporting area. Cultivable waste and fallow lands are each 5 per cent in area. Net sown area is 51 per cent in Faizabad and 65 to 85 per cent elsewhere; the zonal average being 73 per cent.

4.90 Nearly 40 to 65 per cent of the area is under irrigation and the soils are recent alluvial with saline patches.

4.91 The annual rainfall average ranges from 100 to 110 cm in about fifty rainy days. July and August are the rainiest months accounting for more than 50 per cent of annual rainfall. The rainfall during these two months is around 30 cm pm. September rainfall is 20 to 24 cm and that of June about 11-12 cm.

4.92 Paddy is the major crop of the zone occupying 28 per cent of cropped area. Wheat and barley follow with 15 and 13 per cent respectively. Pulses occupy an area of 21 per cent, gram 8 per cent, other pulses 10 per cent, maize 6 per cent and sugarcane 5 per cent. Barley is major crop of Jaunpur and Kerakat taluks occupying 30 and 24 per cent areas respectively. The zone has ten patterns, eight beginning with paddy and one each with gram and barley. In two patterns, the subscript 5 has been introducted for other pulses and sugarcane crops; these become necessary in order to get the minimum prescribed total area for a pattern. The patterns and the taluks are given below :

Pattern	*Taluk*
Pd_3 W_4 $G_4/Ba_4/Pu_4$	Faizabad Bikapur Tanda Ramsanehighat Harraiya
Pd_3 W_4 G_4 Pu_5	Nawabganj
Pd_4 W_4 Ba_4 Pu_4/G_4	Ghazipur
Pd_4 W_4 Ba_4 G_4 Pu_4	Mohammadabad
Pd_3 Ba_4 Pu_4	Lalganj
Pd_3 Ba_4 Pu_4 $W_4/S_4/_5/T_4$	Phulpur Azamgarh
Pd_4 Ba_4 W_4 B_4 Pu_5	Saidpur
Pd_3 W_4 Ba_4 $Pu_4/G_4/M_4$	Kadipur
G_4 W_4 Pd_4 Ba_4 M_4/Pu_4	Ballia
Ba_4 M_4 Pd_4 W_4	Jaunpur Kerakat

4.93 The Relative Yield Index values of the principal crops of the zone are given in Table 18. Rice yields are low being only half of all India average in better and close to all-India. Yields of pulses are better and close to all-India. Yields of pulses are quite good and are above all-India level.

4.94 Cattle and goats together account for seventy per cent of the total livestock. Male cattle are the largest single category, being more than 30 per cent of the total livestock population except in Ballia and Ghazipur. The zone has two livestock patterns :

Pattern	*Taluk*
Cm_4 Cf_4 Cy_4 G_4	Ballia Ghazipur
Cm_3 Cf_4 Cy_4 G_4	Rest of the Zone.

TABLE 18

Relative Yield Index of Principal Crops in Zone X

District	Rice	Wheat	Maize	Bajra	Barley	Gram	Total pulses
Barabanki	76	88	69	157	90	130	158
Faizabad	65	90	69	—	75	108	152
Azamgarh	55	96	73	—	102	123	167
Jaunpur	50	103	139	—	99	130	181
Ghazipur	50	113	71	—	110	136	170

NOTE : The Relative yield Indexrepresents the district Yield expressed as percentage of the corresponding all India average yield for 1968-69 to 1970-71.

Rainfall Zone XI—E_4 (A_2 C_1 E_1) E_4

4.95 The districts, taluks and the cropping patterns included in the zone are : -

Cropping Pattern	*Taluk*	*District*
G_3 W_4	Banda	Banda
G_3 W_4 Pd_4	Baberu	,,
G_3 W_4 Jk_4 T_4/Pd_4	Naraini	,,
,,	Karwi	,,
Pd_4 W_4 Ba_4 B_4 $G_4/Pu_4/_5$	Handia	Allahabad
Pd_4 W_4 G_4 Ba_4	Meja	,,
Pd_4 W_4 Ba_4 B_4 $G_4/Pu_4/_5$	Gyanpur	Varanasi
Pd_4 Ba_4 W_4 Pu_5 S_5 B_5	Varanasi	Varanasi
Pd_3 W_4 G_5 $Ba_4/Pu_4/Mt_4$	Chandauli	,,
Pd_3 W_4 G_5	Chakia	,,
Pd_4 W_4 Ba_4 G_4 B_4 Mt_4	Mirzapur	Mirzapur
Pd_3 W_4 G_5 $Pu_4/Mt_4/Ba_4$	Chunar	,,

4.96 The area of the zone is 18141 sq km. There is wide variation in the areas of taluks ranging from as low as 584 sq km to 3067 sq km. The population is 5.6 million with an average population density of 308. There is large variation in taluk population density, ranging from 197 in Mirzapur to 990 in Varanasi taluk.

4.97 There are large variations between minimum and maximum elevations in the taluks. The differences exceed 200 metres in Nariani, Meja and Chakia.

Taluks grouped according to elevations are given below :

Chakia, Meja, Naraini, Chunar, Karwi and Mirzapur	150 to 400 masl
rest	75 to 150 masl

4.98 Fourteen per cent of the reporting area is not available for cultivation. Cultivable waste ranges from 11 to 17 per cent in a number of taluks zonal average being 9 per ceint. Fallow lands account for 7 per cent of the area. Net sown area varies from 40 per cent in Mirzapur to 87 per cent in Chandauli, the zonal average being 63 per cent.

4.99 Area under irrigation varies widely. Chakia taluk has 80 per cent of area under irrigation followed by 50 per cent in Varanasi and Chunnar and 30 to 40 per cent in Naraini, Handia, Gyanpur, Chandauli and Baberu. In the rest of taluks, irrigated area is less than 20 per cent. Western half of Banda has red sandy and Varanasi recent alluvial soils. The rest of the zone has mainly red and yellow soils.

4.100 The annual average rainfall ranges from 100 to 110 cm in 45-50 rainy days. Rainfall in August is higher than July the rainfall in these two months accounts for about 60 per cent of annual precipitation. Normally July and August receive rainfall of 30 to 34 cm pm with September getting 17 to 20 cm and June 7-10 cm rainfall.

4.101 Rice is grown all over the zone, the area being large in the eastern taluks. Wheat is grown on a comparatively smaller area not exceeding 30 per cent. The area under gram in Banda, Babon and Naraini taluks is quite high. The zone has nine cropping patterns three beginning with gram (G_3) and the rest with paddy as the main crop (Pd_3, Pd_4). The patterns and taluks included are :

Pattern	*Taluk*
$G_3\ W_4$	Banda
$G_3\ W_4\ Pd_4$	Baberu
	Naraini
$G_3\ W_4\ Jk_4\ T_4/Pd_4$	Karwi
$Pd_3\ W_4\ G_5$	Chakia
$Pd_3\ W_4\ G_5\ Pu_4/Mt_4/Ba_4$	Chunar
	Chandauli
$Pd_4\ W_4\ G_4\ Ba_4$	Meja
$Pd_4\ W_4\ Ba_4\ B_4\ G_4/Pu_4/_5$	Handia
	Gyanpur
$Pd_4\ Ba_4\ W_4\ Pu_5\ S_5\ B_5$	Varanasi
$Pd_4\ W_4\ Ba_4\ G_4\ B_4\ Mt_4$	Mirzapur

4.102 The Relative Yield Indices of Principal crops grown in the zone are given in Table 19. The yield of all crops, except pulses and small millets are quite low in Banda district, but quite good in Varanasi. Yield of all crops except rice, wheat, barley and sugarcane are higher than all-India in Mirzapur district.

4.103 The population of cattle and goats together accounts for more than 70 per cent of the livestock of the zone and goats alone constitute 16 to 20 per cent of the total. The pattern is :

$$Cm_4\ Cf_4\ Cy_4\ G_4$$

TABLE 19

Relative Yield Index of Principal Crops in Zone XI

District	Rice	Wheat	Gram	Barley	Jowar	Total pulses	Bajra	Small millets	Sugar-cane
Banda	72	75	86	68	97	128	97	150	55
Varanasi	63	107	132	103	150	183	264	139	80
Mirzapur	57	88	136	90	121	178	211	154	94

NOTE : The Relative Yield Index represents the district yield expressed as percentage of the corresponding all-India average yield for 1968-69 to 1970-71.

Rainfall Zone XII—E_4 (A_2 C_2) E_4

4.104 The districts, taluks and the cropping patterns in the zone are :

Cropping pattern	*Taluk*	*District*
$Pd_3\ W_4\ G_5\ Pu_4/Mt_4$	Robertsganj	Mirzapur
$Mt_3\ Pd_4\ Ba_4/M_4$	Dudhi	”
$Pd_4\ W_4\ S_4/G_4$	Dhampur	Bijnor
	Thakurdwara	Moradabad

4.105 The area of the zone is 6,370 sq km. Thakurdwara taluk is the smallest being 600 sq km and Robertsganj is the biggest with an area of 2,644 sq km. The population is 1.26 million with an average population density of 198. The population density varies from 100 to 425 persons in the taluks.

4.106 As compared to other areas of the State, the south eastern part of Mirzapur district is at slightly higher elevation the minimum and maximum being 150 and 650 masl. The rest of the zone, is 200 to 250 masl.

4.107 In Mirzapur district, forests occupy an area of 42 per cent in Dudhi and 14 per cent in Robertsganj. Land not available for cultivation is about 10 per cent, cultivable waste is 13 per cent and fallow land is 12 per cent of the area. Net sown area is 80 per cent of the reporting area.

4.108 Area under irrigation is 30 per cent in Robertsganj and 45 per cent in Dhampur. In the other two taluks irrigation is negligible. Soils are recent alluvial with saline patches.

4.109 Rainfall in the zone is 110 cm to 120 cm. August is the month of maximum rainfall in the east and July in the northwest. Rainfall in these each of the two months is 30 to 35 cm pm. September rainfall is about 20 cm and that of June 10-14 cm.

4.110 Paddy occupies an area of about 30 per cent, followed by wheat with 18 per cent. Small millets are important in Mirzapur district occupying 43 per cent of cropped area in Dudhi and 10 per cent in Robertsganj. Sugarcane occupies 21 per cent area in Dhampur. The patterns are :

Pattern	*Taluk*
Mt_3 Pd_4 Ba_4/M_4	Dudhi
Pd_4 W_4 S_4/G_4	Dhampur, Thakurdwara
Pd_3 W_4 G_4 Pu_4/Mt_4	Robertsganj

4.111 The Relative Yield Index Values of crops in Mirzapur district are given in Table 20. Yields of all crops except small millets, gram and pulses are low.

4.112 Cattle and goats account for more than 70 per cent of the total livestock and the pattern is :

Cm_4 Cf_4 Cy_4.

TABLE 20

Relative Yiled Index of Principal Crops in Zone XII

Crop	Per cent
rice	57
maize	68
small millets	154
wheat	88
barley	90
gram	136
all pulses	178
sugarcane	94

NOTE : The Relative Yield Index represents the district yields expressed as percentage of the corresponding all India average yield for 1968-69 to 1970-71.

Rainfall Zone XIII—E_4 (A_2 B_1 C_1) E_4

4.113 The districts, taluks and the cropping pattern in the zone are :

Cropping pattern	*Taluk*	*District*
W_4 Pd_4 S_4 $M_4/F_4/Pu_5$	Dehradun	Dehradun
	Najibabad	Bijnor
Pd_4 W_4 S_4	Nagina	,,
Pd_3 W_4 $S_4/G_4/M_4$	Kashipur	Nainital (Plains)
	Khatima	,,
W_4 Pd_4 S_4 $M_4/F_4/Pu_5$	Kichcha	,,
Pd_3 W_4 S_4 $/G_4/M_4$	Baheri	Bareilly
	Nawabganj	,,
	Pilibhit	Pilibhit
	Bishalpur	,,
W_4 Pd_4 S_4 $M_4/F_4/Pu_5$	Puranpur	,,
Pd_4 W_4 M_4 S_4	Nighasan	Lakhimpur
Pd_3 W_4 $S_4/G_4/M_4$	Nanpara	Bahraich
W_4 Pd_4 S_4 $M_4/F_4/Pu_5$	Bilaspur	Rampur

4.114 The area of the zone is 14,000 sq km. The areas of taluks vary from less than 500 to about 2500 sq km. The areas of taluks in Nainital are the lowest being 320-420 sq km. The population is 4 million with an average population density of 282. The population density ranges from 133 in Puranpur to 619 in Kichcha.

4.115 Dehradun has more than 35 per cent of the reporting area under forests, whereas Puranpur, Bisalpur and Najibabad have 10 to 20 per cent area under forest. Land not available for cultivation in the zone is 12 per cent. Fallow lands are 5 per cent and cultivable waste is 4 per cent. Net sown area is 36 per cent in Dehradun, 52 per cent in Puranpur and 60-65 per cent in Najibabad and Nighasan.

4.116 Annual rainfall is 110 to 130 cm except in Dehradun, where it is 200 cm. July and August are the rainiest months and these together account for 55 to 60 per cent of annual. June rainfall average is 15 cm and that of September 20-30 cm. In Bijnor area, September rainfall is 25-30 cm. Winter rainfall of Jan to March is substantial.

4.117 Rice, wheat, sugarcane and maize are the main crops and together occupy 72 per cent of the gross cropped area of the zone. All pulses combined form 12 per cent of the area. There are four patterns, three beginning with paddy and one with wheat, which are as follows :

Pattern	*Taluk*
Pd_3 W_4 $S_4/G_4/M_4$	Kashipur Khatima Baheri Nawabganj Pilibhit Bisalpur Nanpara
W_4 Pd_4 S_4 $M_4/F_4/Pu_5$	Dehradun Najibabad Kichcha Puranpur Bilaspur
Pd_9 W_4 S_4	Nagina
Pd_4 W_4 M_4 S_4	Nighasan

4.118 The Relative Yield Indices of crops in Bareilly, Rampur, Bahraich and Kheri have been discussed under other zone. The Relative Yield indices of crops in Nainital, Dehradun, Pilibhit and Bijnor are given in Table 21.

The crop yields are satisfactory in Nainital and Dehradun districts. In Pilibhit and Bijnor districts, the yields of rice, maize, barley and sugarcane are quite low and that of wheat and tota pulses is satisfactory.

4.119 Goats dominate in Dehradun area whereas cattle dominate in the other districts. The livestock patterns are :

Dehradun	G_4 Cm_4 Cf_4 Cy_4
Bijnor	Cm_3 Cf_4 Cy_4
Pilibhit } nainital }	Cm_4 Cf_4 Cy_4 G_4 $/Bf_4$

TABLE 21

Relative Yield Index of Principal Crops in Zone XIII

District	Rice	Maize	Wheat	Barley	Gram	Total Pulses	Total Sugarcane
Nainital	119	110	105	67	103	131	82
Dehradum	97	85	85	81		108	91
Pilibhit	79	82	106	86		142	79
Bijnor	73	83	100	49	101	173	87

NOTE : The Relative Yield Index represents the district yield as percentage of the corresponding all-India average Yield for 1968-69 to 1970-71.

Rainfall Zone XIV—E_4 (A_2 B_1 C_1) D_1 E_3

4.120 The districts, taluks and the cropping patterns in the zone are :

Cropping pattern	*Taluk*	*District*
$Pd_3 W_4 M_4$	Bahraich	Bahraich
$M_3 W_4 Pd_4$	Kaiserganj	,,
$Pd_3 W_4 M_4/Pu_4$	Gonda	Gonda
	Utraula	,,
$Pd_3 W_4 M_4 Pu_4$	Balarampur	,,
$M_4 W_4 Pd_4$	Tarabganj	,,
$Pd_3 W_4 Ba_4/Pu_4$	Basti	Basti
	Bansi	,,
	Khalilabad	,,
$Pd_2 W_4$	Damariaganj	,,
	Naugarh	,,
	Maharajganj	Gorakhpur
	Pharenda	,,
$Pd_3 W_4 Mt_4/Ba_4$	Gorakhpur	,,
$Pd_4 W_4 Ba_4 Mt_4$	Bansgaon	,,
$Pd_3 W_4 S_4/Mt_4$	Hata	Deoria
$W_3 Pd_4 S_4$	Padrauna	,,

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4.121 This zone has an area of 26,000 sq km. The areas of all the taluks are higher than 1,000 sq km. The total population of the zone is 10 million with an average population density of 390. The taluk population density varies between 260 (Balrampur) and 679 (Gorakhpur).

4.122 In Bahraich and Gonda areas of the zone, the elevations are 90 to 125 masl and it is 75 to 100 masl in the rest of the zone.

4.123 Pharenda and Mahrajganj taluks have about 15 per cent of reporting area under forests. Land not available for cultivation is 10 per cent. The zonal average of net sown area is 77 per cent.

4.124 The area is irrigated is 30 to 60 per cent and soils are recent alluvial.

4.125 The annual average rainfall is 110 to 130 cm except in Phrenda and Damariaganj areas, which receive more rainfall. July is the month of maximum rainfall and together with August contributes 55 per cent of the total. Rainfall in July is 35 to 40 cm and that in August 30 to 35 cm. September rainfall averages between 20 and 25 cm and June gets 12 to 16 cm. October rainfall is 5 to 7 cm.

4.126 Paddy occupies about one-third of the area in the zone followed by wheat, maize, pulses, gram, barley, small millets and sugarcane. The zone is covered by seven patterns four beginning with Paddy, two with maize and one with wheat.

Pattern	*Taluk*
$Pd_2 W_4$	Domariaganj Naugarh Maharajganj Pharenda
$Pd_3 W_4 M_4/Pu_4/Mt_4/Ba_4/S_4$	Bahraich Gonda Utraula Basti Bansi Khalilabad Gorakhpur Hata
$Pd_3 W_4 M_4 Pu_4$	Balrampur
$Pd_4 W_4 Ba_4 Pu_4$	Bansgaon
$M_3 W_4 Pd_4$	Kaisarganj
$M_4 W_4 Pd_4$	Tarabganj
$W_3 Pd_4 S_4$	Padrauna

4.127 The Relative Yield Indices of the main crops of the zone are given in Table 22. Yields of rice, maize, barley and wheat are low. Yields of small millets, gram and total pulses are good. Sugarcane yields seem satisfactory in relation to State average.

4.128 Cattle and goats account for more than 70 per cent of the total livestock population. The zone is covered by two livestock patterns which are :

$Cm_3 Cf_4 Cy_4 G_4$	Gorakhpur Deoria Basti Gonda
$Cm_4 Cf_4 Cy_4 G_4$	Bahraich

TABLE 22

Relative Yield Index of Principal Crops in Zone XIV

District	Rice	Wheat	Maize	Barley	Small Millets	Gram	Total Pulses	Sugarcane
Gorakhpur	77	100	73	85	169	108	155	103
Deoria	67	87	77	80	167	107	153	85
Basti .	68	100	67	67	169	130	174	90
Gonda	62	79	62	65	167	115	143	83
Bahraich	62	73	69	80	170	145	134	80

NOTE: The Relative Yield, Index represents the district yield as percentage of the corresponding all-India average yield for 1968-69 to 1970-71.

5 GENERAL OBSERVATIONS FOR FUTURE CROPPING PATTERNS

5.1 In the foregoing sections we have dealt with in detail the rainfall, cropping and livestock patterns which emerge from the existing information. We have also categorised the rainfall patterns into zones and discussed how the other patterns feature in those zones. Among other information that on soils, which ought to play an important role in determining cropping patterns, is lacking in such details as are wanted for this analysis. Data on orography and population density have featured in this analysis but their exact role on cropping and livestock patterns could not be brought out owing to lack of detailed information. We are, however, convinced that studies and analysis indicated in the preceding sections are important for the guidance they may give in deciding cropping and livestock paterns vis-a-vis rainfall patterns. The greater the accuracy of the primary information, and the more detailed such information is, the more useful the data would be in predicting the most efficient cropping and livestock patterns in an area or a zone. With this purpose in view the following procedures are suggested :

(i) Delineation of rainfall zones;

(ii) Identifiation of the existing cropping patterns;

(iii) Assessment of area needed for each crop and its ideal distribution;

(iv) Comparison of (iii) with (ii) in order to determine possible changes; and

(v) Consideration of other related factors like soil, irrigation facilities, density of population, livestock patterns and then arriving at the future cropping patterns.

5.2 The methods of delineating rainfall patterns or zones and cropping patterns have been fully discussed in Section 2. For the purpose of locating suitable areas for a crop, soil and topography of the land are important factors. The approximate area to be put under each crop will be decided by the demand for it not only at a State level but at the national level, either for internal consumption or for the purpose of export. The departments responsible for crop planning of a State should, therefore, be cognizant of the demand for a crop, so that production efforts are not rendered futile because of lack of demand and marketing. We have already discussed the part each of the factors mentioned in item (v) of para 5.1 is the factors mentioned in item (v) of para 5.1 is likely to play in deciding cropping patterns. For this purpose not only detailed data but also knowledge about the correlation between these factors and crop performance would be necessary. Knowledge gained, through long experience, by farmers would also be most helpful.

5.3 It may be mentioned that the rainfall intervals which form the basis of identifying rainfall patterns are subject to minor modifications. Thus, the condition that 30 cm of rainfall for three consecutive months is good for paddy may not be rigorously adhered to. If the soil is favourable with a high water retention capacity or, what is more important, water management is efficient with an eye to economise water use, rainfall lower than 30 cm for three months may sustain a good crop of paddy.

5.4 The choice of a cropping pattern is not decided by the farmer only on technical grounds. He is also guided by the profitability of the crops or requirements for his household consumption. Farmers may not be inclined to accept a crop unless the necessary inputs and infrastructure are assured. Of all the inputs water is the most important as is made evident by the spread of groundnut in the country, sugarcane in Gujarat, maize and cotton in Karnataka and recently of wheat in West Bengal. These are excellent instances of the manner of introduction of new crops in the cropping patterns of a State or a region.

Some Observations Pertaining to Uttar Pradesh

5.5 Uttar Pradesh is known for its fertile alluvial soils. Irrigation facilities are also well developed and these are going to improve further with the progress of time. With these two inherent advantages and with increased adoption of better technology involving the use of fertilisers and plant protection chemicals, it should be possible for the State to attain much higher standards of yield of various crops than the existing levels. Despite increased production which would be obtained through better methods of crop production this State will also have to increase the area under various crops in order to cope with the increasing demands in relation to various agriculture based commodities not only for meeting the needs of the State but also for contributing substantially towards the fulfilment of national needs. The area under oilseeds crops, pulses, maize, vegetables and fodders will have to be particularly increased. Crops like soyabean and sunflower will require to be increasingly popularised over the plains.

5.6 While reviewing the croping patterns of the State, it would be desirable to fix the area targets of various crops for different regions of the State. The State has some distinct features. Broadly, it could be divided into five regions, viz, (a) the hills of western Uttar Pradesh, (b) the *tarai* region stretching in a narrow strip all along the Himalayan foothills, (c) Bundelkhand and (d) west central and (e) eastern Uttar Pradesh.

5.7 The hills of western Uttar Pradesh have been ideal for growing temperate fruits and vegetables. These have been utilised for multiplying the seed material of such crops including potato. Some areas like the Doon valley have been particularly suited for growing the famous fragrant rice, the *basmati*. The growing of rice has, however, been reported to even in a little higher elevations. With better technology, it should be possible to increase rice yields even by increasing the area and in so doing, we favour that rice growing should be confined only to the valleys, releasing all the high lying areas from it for other crops. The growing of fruit and vegetable crops both for consumption as well as seed purposes requires to be intensified.

5.8 It is known that the exotic soyabean varieties have poor consumer acceptance due to higher oil content and slightly bitter taste. Compared with this, the local soyabean variety, *bhatwas*, has a better acceptance. This variety is mostly grown over the hills of West Uttar Pradesh and adjoining Himachal Pradesh. It is desirable to increase the cultivation of this variety of soyabean specially for seed purposes so that the seed can then be supplied to the plain areas.

5.9 The crops which need special attention in the new cropping patterns in the *tarai* belt would be sugarcane, maize and soyabean.

5.10 West Uttar Pradesh plains should be able to earmark significant area for cotton. Sunflower is a crop which could be popularised throughout the plains covering the west, central and eastern parts.

5.11 The emphasis is Bundelkhand area will be to increase dryland crops. Among pulses, *moth* and soyabean could be tried in kharif besides gram in rabi which is already being taken. Among the oilseeds, niger and safflower also deserve to be tried and extended. Irrigation facilities are being increased in Bundelkhand also, with increased irrigation, various kinds of fruit, fodder and vegetable crops can also be included in the cropping patterns.

5.12 The eastern part of the State really represents a problem area where riverine floods are more or less an annual feature. July and August are the rainiest months because of which the farmers venture to take paddy crop extensively. But as these are the very months when floods also occur, the crop invariably suffers year after year resulting in a lower production than is observed in many other parts. The crops which are extensively taken in rabi season are wheat and peas. Peas mostly depend on the residual moisture left in paddy fields.

5.13 The rivers in the eastern part of the State are so many that it is really difficult to tame all of them in order to save the agricultural lands from the ravages of floods. In view of this, the feasibility of leaving a safe margin along the banks of rivers and along the peripheries of tanks and lakes which are prone to inundation, uncultivated during the kharif season needs to be examined. Paddy should not be allowed to occupy uplands. The uplands could be put under less water requiring crops than paddy like maize, soyabean, urid and various fodders. The safety margin which is excluded from kharif cultivation could be utilised for some late quick growing crops including oilseeds and for the growing of cucurbits, maize, vegetables and fodder in the summer season. Introduction of forage logumes in rotation with cereals, needs special consideration.

APPENDIX 1

Talukwise Land Use (1969-70) and Population Statistics

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(thousand hectares)

District/taluk	Population 1971		forests	nac	cw	pp& gl	mtc &g	fallow lands	net area sown
	total	density per sq km							
	Rainfall	*Zone—I*	..	..	..	..	*Rainfall*	*Pattern—$E_4(C_3E_1)E_4$*	
Mathura									
Mathura	453698	430	1 (1)	10 (9)	3 (3)	1 (1)	1 (1)	4 (4)	86 (81)
Mat	279272	330	— (—)	7 (8)	2 (2)	— (—)	1 (1)	4 (5)	71 (84)
Chhata	257905	248	— (—)	10 (9)	2 (2)	1 (1)	1 (1)	6 (6)	85 (81)
Sadabad	299432	380	— (—)	6 (7)	1 (1)	1 (1)	0·4 (1)	3 (4)	68 (86)
Agra									
Kiraoli	224547	320	1 (2)	4 (6)	2 (3)	— (—)	— (—)	2 (3)	58 (86)
Kheragarh	204436	256	4 (5)	7 (9)	5 (6)	1 (1)	— (—)	3 (4)	60 (75)
Fatehabad	196841	315	3 (5)	6 (10)	2 (3)	— (—)	— ( )	2 (3)	50 (79)
	Rainfall	*Zone—II*	..	..	..		*Rainfall*	*Pattern—E_4*	*$(C_3D_1)E_4$*
Saharanpur									
Nakur	354156	330	— (—)	11 (10)	6 (6)	— (—)	1 (1)	5 (5)	84 (78)
Muzaffarnagar									
Kairana	476723	432	— (—)	14 (13)	6 (5)	1 (1)	2 (2)	3 (3)	84 (76)
Budhana	363103	489	— (—)	8 (11)	1 (2)	— (—)	1 (2)	2 (3)	62 (83)
Meerut									
Ghaziabad	718923	624	— (—)	20 (18)	6 (5)	— (—)	1 (1)	5 (4)	83 (72)
Hapur	516738	478	— (—)	12 (11)	3 (3)	— (—)	1 (1)	3 (3)	89 (82)
Baghpat	561066	543	— (—)	12 (12)	2 (2)	— (—)	— (—)	3 (3)	85 (83)
Bulandshahr									
Sikandrabad	464734	347	2 (1)	18 (13)	6 (5)	2 (1)	1 (1)	6 (4)	100 (75)
Bulandshahr	640248	524	1 (1)	13 (10)	4 (3)	— (—)	2 (2)	4 (3)	99 (81)
Khurja	451314	384	1 (—)	14 (12)	8 (7)	— (—)	2 (2)	4 (4)	89 (75)
Aligarh									
Aligarh (Koil)	569297	622	— (—)	16 (18)	2 (2)	1 (1)	1 (1)	5 (5)	66 (73)
Khair	352074	312	— (—)	13 (12)	3 (3)	1 (1)	— (—)	5 (5)	82 (79)
Iglas	191978	348	— (—)	4 (7)	1 (2)	— (—)	— (—)	1 (2)	49 (89)
Hathras	370423	493	— (—)	8 (11)	1 (1)	— (—)	0·4 (1)	2 (2)	64 (85)
Sikandra Rao	301759	346	— (—)	20 (23)	2 (2)	1 (1)	1 (1)	3 (4)	60 (69)
Mainpuri									
Shikohabad	313328	411	2 (3)	12 (15)	1 (2)	(—)	0·4 (1)	4 (5)	57 (75)
Etah									
Jalesar	200230	340	— (—)	11 (18)	3 (5)	— (—)	1 (1)	3 (5)	42 (71)
Agra									
Etmadpur	298755	413	2 (3)	7 (10)	1 (2)	— (—)	1 (1)	3 (5)	58 (79)

— nil or negligible
nac — not available for cultivation
cw — culturable waste
pp& gl — permanent pastures and other grazing lands
mtc & g — miscellaneous tree crops and groves not included in net area sown

NOTE : Figures in brackets represent percentage to total reporting area.

APPENDIX I (*Contd.*)

(thousand hectares)

District/taluk	Population 1971 total	Population 1971 density per sq km	forests	nac	cw	pp &gl	mtc & g	fallow lands	net area sown
	Rainfall Zone—II (Contd.)		..	..	..	*Rainfall Pattern*—E_4 (C_3 D_1) E_4			
Firozabad	342092	650	1 (3)	7 (13)	2 (3)	— (—)	0·4 (1)	3 (5)	40 (75)
Agra	832312	1543	1 (2)	9 (18)	1 (2)	— (—)	0·4 (1)	2 (3)	39 (74)
	Rainfall Zone—III		..	..	..	*Rainfall Pattern*—E_4 ($B_1C_2E_1$) E_4			
Bulandshahr									
Anupshahr	517047	447	4 (3)	14 (12)	3 (3)	— (—)	2 (2)	4 (3)	88 (77)
Badaun									
Gunnaur	237605	254	— (—)	12 (13)	5 (5)	— (—)	6 (7)	5 (5)	65 (70)
Aligarh									
Atrauli	353298	397	— (—)	11 (12)	2 (2)	1 (1)	2 (2)	3 (4)	70 (79)
Etah									
Etah	440819	354	— (—)	9 (7)	29 (23)	1 (1)	1 (1)	7 (5)	78 (63)
Mainpuri									
Jasrana	247432	301	— (—)	19 (23)	3 (4)	1 (1)	— (—)	5 (6)	54 (66)
Mainpuri	319742	319	— (—)	30 (30)	6 (6)	— (—)	1 (1)	7 (7)	56 (56)
Bhongaon	393843	335	— (—)	22 (18)	7 (6)	— (—)	3 (3)	7 (6)	80 (67)
Karhal	169189	299	0·4 (1)	11 (19)	3 (5)	1 (2)	1 (2)	3 (5)	37 (66)
	Rainfall Zone—IV		..	..	..	*Rainfall Pattern*—E_4 ($B_2C_1E_1$) E_4			
Saharanpur									
Saharanpur	655237	527	— (—)	22 (18)	2 (1)	— (—)	1 (1)	3 (3)	96 (77)
Deoband	404838	406	— (—)	9 (9)	2 (2)	— (—)	1 (1)	2 (2)	85 (86)
Roorkee	640603	450	— (—)	27 (18)	4 (3)	— (—)	1 (1)	5 (4)	105 (74)
Bijnor									
Bijnor	400030	313	3 (2)	19 (14)	3 (2)	— (—)	2 (2)	8 (7)	92 (73)
Muzaffarnagar									
Muzaffarnagar	555427	407	— (—)	13 (11)	3 (3)	— (—)	1 (1)	5 (5)	95 (80)
Jansath	407036	357	1 (1)	18 (16)	3 (3)	— (—)	1 (1)	6 (5)	84 (74)
Shahjahanpur									
Tilhar	321913	300	— (—)	11 (10)	2 (2)	— (—)	2 (2)	16 (15)	76 (71)
Jalalabad	255156	270	— (—)	14 (15)	4 (5)	— (—)	3 (3)	6 (6)	67 (71)
Etah									
Kasganj	512893	402	— (—)	14 (11)	(6) (5)	— (—)	5 (4)	8 (6)	94 (74)
Aliganj	416983	312	— (—)	14 (10)	12 (9)	— (—)	3 (3)	8 (6)	96 (72)
Farrukhabad									
Farrukhabad	531316	427	— (—)	20 (16)	8 (6)	1 (1)	3 (3)	7 (5)	86 (69)
Kaimganj	298381	314	— (—)	15 (16)	8 (9)	— (—)	3 (3)	7 (8)	61 (64)
Chhibramau	380621	352	— (—)	11 (11)	9 (8)	2 (2)	3 (3)	6 (6)	76 (70)
Meerut									
Meerut	742834	1054	1 (1)	9 (13)	2 (3)	— (—)	1 (1)	3 (5)	54 (77)
Mawana	390775	366	3 (3)	15 (14)	4 (4)	— (—)	0·4 (1)	5 (5)	79 (74)
Sardhana	436617	493	1 (1)	9 (10)	2 (2)	1 (1)	1 (1)	3 (3)	73 (82)

APPENDIX 1 (*Contd.*)

(thousand hectares)

District/taluk	population 1971		forests	nac	cw	pp &gl	mtc&g	fallow lands	net area sown
	total	density per sq km							
	Rainfall Zone—IV (Contd.)		..	..	..	*Rainfall Pattern*—E_4		(B_2 C_1 E_1) E_4	
Moradabad									
Moradabad	539390	701	— (—)	12 (16)	1 (1)	— (—)	1 (1)	4 (5)	59 (77)
Amroha	426857	430	— (—)	9 (9)	1 (1)	— (—)	— (—)	4 (4)	55 (86)
Hasanpur	356499	244	7 (5)	16 (11)	10 (7)	1 (1)	3 (2)	11 (7)	99 (67)
Sambhal	495230	407	— (—)	9 (7)	1 (1)	— (—)	2 (2)	3 (3)	106 (87)
Bilari	419136	486	— (—)	6 (7)	1 (1)	— (—)	1 (1)	2 (2)	77 (89)
Rampur									
Shahabad	135307	312	— (—)	8 (18)	1 (2)	— (—)	0·4 (1)	1 (2)	33 (77)
Badaun									
Budaun	440071	375	2 (2)	11 (9)	3 (3)	— (—)	2 (2)	6 (5)	93 (79)
Dataganj	314609	289	1 (1)	14 (13)	4 (4)	— (—)	2 (2)	5 (4)	83 (76)
Sahaswan	309810	283	— (—)	11 (10)	3 (3)	— (—)	3 (3)	5 (5)	87 (79)
Bisauli	343872	369	— (—)	6 (7)	1 (1)	— (—)	1 (1)	2 (2)	83 (89)
Bareilly									
Aonla	311422	378	0·2 (0·2)	8 (10)	3 (4)	— (—)	1 (1)	3 (4)	67 (81)
Kannauj	346612	341	2 (2)	18 (17)	6 (6)	— (—)	4 (4)	4 (4)	68 (67)
Hardoi									
Hardoi	535934	327	1 (—)	17 (11)	12 (7)	2 (1)	7 (5)	10 (6)	115 (70)
Shahabad	415047	298	— (—)	18 (13)	13 (9)	— (—)	8 (6)	36 (26)	65 (46)
Bilgram	445568	272	2 (1)	21 (14)	7 (5)	— (—)	2 (1)	10 (7)	110 (72)
Sandila	452970	315	2 (1)	21 (15)	7 (5)	3 (2)	6 (4)	17 (12)	88 (61)
Agra									
Bah	209655	240	17 (19)	13 (14)	2 (3)	— (—)	— (—)	2 (3)	54 (61)
Etawah									
Etawah	413356	373	10 (9)	19 (17)	2 (2)	— (—)	1 (1)	6 (6)	73 (65)
Bharthana	342341	317	9 (9)	19 (17)	3 (3)	— (—)	1 (1)	5 (5)	71 (65)
Bidhuna	331078	299	2 (2)	20 (18)	7 (6)	1 (1)	1 (1)	8 (7)	72 (65)
Auraiya	360927	336	7 (6)	15 (14)	2 (2)	1 (1)	1 (1)	4 (4)	78 (72)
Jalaun									
Jalaun	289722	218	5 (3)	13 (10)	2 (2)	— (—)	1 (1)	3 (3)	109 (81)
Kalpi	177380	146	5 (4)	16 (13)	5 (4)	— (—)	— (—)	3 (2)	95 (77)
Konch	191612	181	6 (6)	6 (5)	2 (2)	— (—)	1 (1)	2 (2)	89 (84)
Orai	154776	167	6 (7)	8 (9)	4 (4)	— (—)	1 (1)	3 (3)	71 (76)
Kanpur									
Kanpur	1525835	1464	1 (1)	19 (18)	4 (4)	5 (4)	5 (4)	6 (5)	65 (62)
Bilhaur	304084	300	3 (3)	24 (24)	6 (6)	— (—)	1 (1)	5 (5)	62 (61)
Akbarpur	278161	291	— (—)	21 (22)	3 (4)	— (—)	2 (2)	4 (4)	65 (68)
Derapur	305428	292	3 (3)	16 (15)	4 (4)	— (—)	1 1)	3 (3)	78 (74)

APPENDIX 1 (*Contd.*)

(thousand hectares)

District/taluk	Population 1971		forests	nac	cw	pp & gl	mtc & g	fallow lands	net area sown
	total	density per sq km							
	Rainfall Zone—IV—(contd.)			..	..	*Rainfall Pattern* E_4 (B_2 C_1 E_1) E_4			
Bhognipur	271162	276	— (—)	13 (13)	2 (3)	— (—)	5 (5)	3 (3)	75 (76)
Ghatampur	311562	282	— (—)	14 (13)	2 (2)	— (—)	1 (1)	4 (3)	89 (81)
Unnao									
Purwa	435325	308	— (—)	22 (16)	13 (9)	1 (1)	8 (6)	9 (6)	88 (62)
Unnao	347321	342	1 (1)	15 (14)	7 (7)	2 (2)	4 (4)	8 (8)	66 (64)
Hasanganj	361339	324	5 (5)	16 (14)	7 (6)	1 (1)	4 (4)	7 (6)	71 (64)
Safipur	340408	321	2 (2)	19 (18)	7 (7)	— (—)	2 (2)	8 (8)	67 (63)
Lucknow									
Lucknow	1103918	1192	1 (1)	19 (21)	6 (6)	— (—)	2 (2)	8 (9)	56 (61)
Malihabad	294718	455	2 (2)	11 (13)	6 (7)	1 (1)	5 (8)	4 (5)	56 (64)
Mohanlal ganj	219210	313	— (—)	11 (15)	7 (10)	3 (4)	4 (6)	4 (5)	42 (60)
Bara Banki									
Fatehpur .	421116	324	1 (1)	20 (15)	8 (6)	— (—)	6 (5)	8 (6)	88 (67)
Haidargarh	286859	382	— (—)	9 (12)	6 (8)	— (—)	7 (10)	4 (5)	48 (65)
Sitapur									
Sidhauli	449669	317	— (—)	17 (12)	5 (4)	— (—)	3 (2)	11 (8)	105 (74)
Biswan	433856	297	— (—)	17 (12)	5 (3)	— (—)	5 (3)	9 (6)	110 (76)
Sultanpur									
Sultanpur	540578	411	— (—)	19 (15)	6 (4)	— (—)	10 (7)	5 (4)	92 (70)
Musafir Khana	376251	366	1 (1)	12 (12)	7 (7)	— (—)	3 (3)	5 (5)	74 (72)
Amethi	297283	314	— (—)	17 (18)	5 (6)	— (—)	5 (5)	5 (5)	62 (66)
Faizabad									
Akbarpur	592241	426	1 (1)	17 (12)	8 (6)	— (—)	6 (5)	4 (3)	(103) (73)
Rae Bareli									
Maharajganj	361245	300	1 (1)	20 (17)	9 (7)	2 (2)	9 (7)	8 (7)	71 (59)
Rae Bareli	339139	358	— (—)	12 (13)	9 (10)	1 (1)	6 (6)	5 (5)	62 (65)
Salon	368071	320	— (—)	22 (19)	8 (7)	— (—)	8 (7)	5 (5)	71 (62)
Dalman	442357	352	1 (1)	23 (19)	11 (9)	— (—)	6 (5)	5 (4)	79 (62)
Fatehpur									
Fatehpur	505078	304	— (—)	27 (16)	8 (5)	3 (2)	4 (2)	9 (6)	115 69
Bindki	397182	307	— —	17 (13)	5 (4)	1 (1)	1 (1)	7 (5)	98 (76)
Khaga	375994	300	— (—)	24 (19)	8 (7)	— (—)	4 (3)	(9) (7)	80 (64)
Hamirpur									
Hamirpur	164417	153	4 (3)	11 (10)	3 (3)	— (—)	— (—)	4 (6)	86 (78)
Maudaha	219589	140	2 (1)	11 (7)	10 (7)	— (—)	— (—)	9 (6)	124 (79)
Mahoba	197601	136	6 (4)	15 (10)	23 (16)	— (—)	— (—)	14 (10)	87 (60)
Charkhari	182706	125	6 (4)	14 (10)	16 (11)	— (—)	1 (1)	11 (7)	98 (67)

APPENDIX 1 (*Contd.*)

(thousand hectares)

District/taluk	Population 1971 total	Population 1971 density per sq km	forests	nac	cw	pp & gl	mtc & g	fallow lands	net area sown
	Rainfall Zone —IV—(Concld.)			..	..	*Rainfall Pattern—E_4 (B_2 C_1 E_1) E_4*			
Rath	223902	137	11	18	9	—	1	8	115
			(7)	(11)	(5)	(—)	(1)	(5)	(71)
Jhansi									
Moth	174065	149	5	10	7	—	—	4	91
			(4)	(9)	(6)	(—)	(—)	(3)	(78)
Garautha	171011	113	8	17	14	1	—	7	105
			(6)	(12)	(9)	(—)	(—)	(4)	(69)
Mauranipur	182229	168	1	12	14	—	1	8	72
			(1)	(11)	(13)	(—)	(1)	(8)	(66)
Allahabad									
Chail (Allahabad)	799130	100	—	16	2	—	2	7	53
			(—)	(20)	(3)	(—)	(3)	(8)	(66)
Phulpur	330377	441	—	18	1	—	3	12	41
			(—)	(24)	(1)	(—)	(4)	(16)	(55)
Saraon	331631	486	—	11	2	0·3	4	5	47
			(—)	(16)	(2)	(1)	(5)	(7)	(69)
Karchhana	356218	264	2	17	11	—	3	11	91
			(2)	(13)	(8)	(—)	(2)	(8)	(67)
Manjhanpur	226967	322	—	11	4	—	2	3	49
			(—)	(16)	(4)	(—)	(5)	(5)	(70)
Sirathu	214731	356	—	11	5	—	2	3	40
			(—)	(18)	(8)	(—)	(4)	(4)	(66)
Banda									
Mau	109948	134	8	9	12	—	1	6	46
			(9)	(11)	(15)	(—)	(1)	(7)	(57)
Jaunpur									
Machhlishahr	368163	402	—	11	6	—	2	8	64
			(—)	(12)	(7)	(—)	(2)	(9)	(70)
Mariahee	393065	481	—	9	4	—	2	7	59
			(—)	(11)	(5)	(—)	(3)	(9)	(72)
Shahganj	427583	474	—	10	2	1	3	5	69
			(—)	(11)	(3)	(1)	(3)	(6)	(76)
	Rainfall Zone—V		..	..	..	*Rainfall Pattern—E_4 (B_2C_2) E_4*			
Azamgarh									
Ghosi	495196	496	—	15	5	—	1	3	76
			(—)	(15)	(3)	(—)	(1)	(3)	(76)
Sagri	425732	452	—	12	3	—	3	2	75
			(—)	(12)	(3)	(—)	(3)	(2)	(80)
Muhammadabad	537553	579	—	11	3	—	2	3	73
			(—)	(12)	(3)	(—)	(2)	(3)	(80)
Kheri									
Lakhimpur	594581	250	8	28	8	—	7	25	162
			(4)	(12)	(3)	(—)	(3)	(10)	(68)
Mahamdi	432882	261	3	15	4	1	5	16	121
			(2)	(9)	(2)	(1)	(3)	(10)	(73)
Sitapur									
Sitapur	539890	412	—	14	4	—	3	8	101
			(—)	(11)	(3)	(—)	(2)	(6)	(78)
Misrikh	460985	302	4	13	5	—	5	12	114
			(3)	(9)	(4)	(—)	(4)	(8)	(74)
Ghazipur									
Zamania	315846	416	—	8	1	—	3	1	63
			(—)	(11)	(1)	(—)	(4)	(1)	(83)
	Rainfall Zone—VI		..	..	..	*Rainfall Pattern—E_4 (B_3 C_1) E_4*			
Ballia									
Rasra	511112	466	—	9	5	—	4	4	87
			(—)	(8)	(5)	(—)	(3)	(4)	(80)
Bansdih	454107	461	—	18	1	—	5	3	72
			(—)	(18)	(1)	(—)	(5)	(3)	(73)
	Rainfall Zone—VII	..	..	..	..	*Rainfall Pattern—E_4 (B_3 C_1) D_1 E_3*			
Deoria									
Salempur	717840	573	—	13	2	—	2	3	109
			(—)	(12)	(1)	(—)	(2)	(2)	(83)
Deoria	705126	549	—	8	2	—	5	4	106
			(—)	(6)	(2)	(—)	(4)	(3)	(85)

APPENDIX 1 (*Contd.*)

(thousand hectares)

District/taluk	Population 1971		forests	nac	cw	pp &gl	mtc &g	fallow lands	net area sown
	total	density per sq km							
	Rainfall Zone—VIII		..	..	..	*Rainfall Pattern—*E_4 (A_1 B_1 C_1 E_1) E_4			
Jhansi									
Jhansi	342833	295	4	13	47	1	1	13	38
			(3)	(11)	(40)	(1)	(1)	(11)	(33)
Lalitpur	259214	95	37	30	83	6	2	27	88
			(14)	(11)	(30)	(2)	(1)	(10)	(32)
Mahroni	177706	84	4	16	72	—	0·3	32	88
			(2)	(8)	(34)	(—)	(0·2)	(15)	(41)
Pratapgarh									
Kunda	503704	360	—	25	7	—	8	5	93
			(—)	(18)	(5)	(—)	(6)	(4)	(67)
Patti	435847	370	—	19	5	—	10	6	77
			(—)	(16)	(5)	(—)	(9)	(6)	(64)
Belha (Pratapgarh)	483156	432	—	13	5	—	10	4	79
			(—)	(12)	(4)	(—)	(9)	(4)	(71)
	Rainfall Zone—IX		..	..	..	*Rainfall Pattern—*F_4 (A_1 B_1 C_2) E_4			
Bareilly									
Bareilly	779712	712	—	18	2	—	2	4	84
			(—)	(16)	(2)	(—)	(2)	(4)	(76)
Faridpur	191147	299	—	7	1	—	1	3	52
			(—)	(11)	(2)	(—)	(1)	(5)	(81)
Shahjahanpur									
Shahjahanpur	411947	403	—	12	3	1	2	10	74
			(—)	(11)	(4)	(1)	(2)	(9)	(73)
Powayan	296488	117	9	10	18	—	4	11	101
			(6)	(6)	(12)	(—)	(3)	(7)	(66)
Rampur									
Rampur	327637	735	—	6	1	—	1	2	36
			(—)	(12)	(2)	(—)	(2)	(4)	(80)
Milak	142659	351	—	4	1	—	0·3	2	33
			(—)	(9)	(3)	(—)	(1)	(5)	(82)
Suar	195425	331	4	5	1	—	—	2	46
			(7)	(9)	(2)	(—)	(—)	(3)	(79)
	Rainfall Zone—X		..	..	..	*Rainfall Pattern—*E_4 (A_1 B_2 C_1) E_4			
Bara Banki									
Nawabganj	410325	443	2	10	6	—	4	6	64
			(2)	(11)	(7)	(—)	(5)	(6)	(69)
Ramsanehighat	517293	342	2	23	7	1	9	7	102
			(1)	(15)	(5)	(1)	(6)	(5)	(67)
Faizabad									
Faizabad	472045	530	—	16	5	0·4	6	11	51
			(—)	(18)	(5)	(1)	(7)	(12)	(57)
Bikapur	424413	358	1	12	7	—	12	6	79
			(1)	(11)	(6)	(—)	(10)	(5)	(67)
Tanda	438582	481	—	15	4	—	2	3	67
			(—)	(17)	(4)	(—)	(2)	(3)	(74)
Azamgarh									
Phulpur	529288	459	—	13	5	—	4	5	88
			(—)	(11)	(4)	(—)	(4)	(5)	(76)
Azamgarh	456315	563	—	10	5	0·4	4	3	59
			(—)	(12)	(6)	(1)	(4)	(4)	(73)
Lalgani	413440	452	—	14	2	—	2	3	71
				(15)	(3)	(—)	(2)	(3)	(77)
Jaunpur									
Jaunpur	469922	652	—	8	4	—	3	4	54
			(—)	(11)	(5)	(—)	(4)	(5)	(75)
Kerakat	346701	557	—	6	3	—	0·3	3	50
			(—)	(10)	(4)	(—)	(1)	(4)	(81)
Ghazipur									
Saidpur	496474	453	—	12	4	1	2	3	88
			(—)	(10)	(4)	(1)	(2)	(3)	(80)
Ghazipur	343657	524	—	9	5	—	1	1	50
			(—)	(13)	(8)	(—)	(2)	(2)	(75)
Muhammadabad	370676	458	—	6	3	—	2	1	68
			(—)	(7)	(4)	(—)	(3)	(1)	(85)

APPENDIX 1 (*Contd.*)

(thousand hectares)

District/taluk	Population 1971		forests	nac	cw	pp & gl	mtc & g	fallow lands	net area sown
	total	density per sq km							
	Rainfall Zone—X (Concld.)			..	..	*Rainfall Pattern—E_4 ($A_1B_2C_1$) E_4*			
Ballia									
Ballia	623716	542	— (—)	26 (23)	1 (1)	— (—)	3 (3)	4 (3)	80 (70)
(Basti) Harraiya	446156	364	— (—)	19 (16)	5 (4)	— (—)	4 (3)	4 (3)	90 (74)
Sultanpur									
Kadipur	428816	370	— (—)	19 (16)	4 (3)	— (—)	2 (2)	8 (7)	83 (72)
	Rainfall Zone—XI		..	..	..	*Rainfall Pattern—E_4 (A_2 C_1 E_1) E_4*			
Banda									
Banda	285767	177	1 (1)	16 (10)	8 (5)	— (—)	1 (1)	9 (5)	127 (78)
Baberu	279320	177	— (—)	9 (6)	10 (6)	— (—)	1 (1)	11 (7)	126 (80)
Naraini	245392	181	2 (1)	16 (12)	17 (12)	— (—)	1 (1)	9 (7)	90 (67)
Karwi	261788	123	15 (7)	32 (15)	22 (11)	— (—)	22 (10)	17 (8)	104 (49)
Allahabad									
Handia	350993	455	— (—)	11 (14)	3 (4)	— (—)	4 (5)	6 (7)	54 (70)
Meja	327231	191	13 (8)	18 (11)	21 (13)	— (—)	2 (1)	15 (9)	102 (58)
Varanasi									
Gyanpur	557307	517	— (—)	23 (21)	— (—)	— (—)	4 (4)	10 (9)	72 (66)
Varanasi	1510474	990	— (—)	16 (11)	5 (3)	— (—)	5 (3)	7 (5)	120 (78)
Chandauli	611304	463	— (—)	10 (8)	3 (2)	— (—)	2 (1)	2 (2)	110 (87)
Chakia	173374	297	7 (11)	7 (11)	3 (4)	— (—)	5 (9)	2 (3)	36 (62)
Mirzapur									
Mirzapur	602355	197	26 (8)	60 (20)	53 (17)	— (—)	17 (6)	28 (9)	123 (40)
Chunar	374779	258	6 (4)	36 (24)	9 (6)	4 (3)	6 (4)	5 (3)	81 (56)
	Rainfall Zone—XII		..	..	..	*Rainfall Pattern—E_4 (A_2 C_2) E_4*			
Mirzapur									
Robertsganj	372180	141	36 (14)	32 (12)	32 (12)	— (—)	1 5 (6)	34 (13)	115 (43)
Dudhi	191774	100	81 (42)	11 (6)	27 (14)	— (—)	— (—)	21 (11)	52 (27)
Bijnor									
Dhampur	503992	425	1 (1)	15 (12)	2 (2)	— (—)	1 (1)	5 (4)	96 (80)
Moradabad									
Thakurdwara	191859	308	— (—)	8 (13)	2 (3)	— (—)	— (—)	2 (4)	50 (80)
	Rainfall Zone—XIII		..	..	..	*Rainfall Pattern—E_4 (A_2 B_1 C_1) E_4*			
Rampur									
Bilaspur	100181	206	1 (2)	4 (8)	1 (2)	— (—)	0·3 (1)	1 (3)	41 (84)
Dehradun									
Dehradun	498178	459	40 (36)	15 (14)	4 (4)	— (—)	8 (7)	3 (3)	39 (36)
Bijnor									
Najibabad	295790	293	18 (18)	11 (11)	1 (1)	1 (1)	1 (1)	3 (3)	65 (65)
Nagina	290373	251	10 (9)	15 (13)	7 (6)	— (—)	3 (2)	7 (6)	74 (64)
Nainital									
Kashipur	175509	415	1 (2)	5 (11)	1 (3)	— (—)	0·4 (1)	2 (5)	33 (78)
Kichha	201919	619	— (—)	4 (12)	1 (3)	— (—)	0·4 (1)	1 (3)	26 (81)

APPENDIX 1 (*Concld.*)

(thousand hectares)

District/taluk	Population total	Population density per sq km	forests	nac	cw	pp&gl	mtc& g	fallow land	net area sown
	Rainfall Zone—XIII (Concld).			..	..	*Rainfall Pattern—E_4 (A_2 B_1 C_1) E_4*			
Khatima	137991	401	1 (3)	5 (14)	1 (3)	— (—)	0·2 (1)	1 (3)	26 (76)
Bareilly									
						Rainfall Pattern E4 (A2 B1C1) E4			
Baheri	313053	331	— (—)	10 (11)	1 (1)	— (—)	1 (1)	4 (4)	78 (83)
Nawabganj	184973	323	— (—)	6 (10)	1 (2)	— (—)	1 (1)	2 (3)	48 (84)
Pilibhit									
Pilibhit	325340	346	— (—)	11 (12)	1 (1)	1 (1)	1 (1)	5 (5)	74 (80)
Puranpur	161949	133	15 (12)	16 (13)	12 (10)	— (—)	7 (6)	8 (7)	64 (52)
Bisalpur	264825	281	10 (11)	9 (9)	2 (2)	— (—)	2 (2)	4 (4)	68 (72)
Lakhimpur									
Nighasan	459127	261	11 (4)	34 (14)	19 (8)	1 (—)	10 (4)	19 (8)	151 (62)
Bahraich									
Nanpara	550675	259	8 (4)	21 (10)	9 (4)	— (—)	8 (4)	9 (4)	158 (74)
	Rainfall Zone—XIV		..	..	..	*Rainfall Pattern—E_4(A_2 B_1 C_1) D_1 E_3*			
Bahraich									
Bahraich	665210	311	5 (2)	20 (10)	4 (2)	1 (—)	6 (3)	7 (3)	171 (80)
Kaisarganj	511080	289	— (—)	25 (14)	11 (6)	1 (1)	5 (3)	13 (7)	121 (69)
Gonda									
Tarabganj	529861	320	1 (1)	25 (15)	16 (9)	1 (—)	6 (4)	17 (11)	99 (60)
Gonda	602729	375	2 (1)	13 (8)	7 (4)	— (—)	7 (4)	4 (3)	128 (80)
Balrampur	580783	260	12 (5)	21 (9)	5 (2)	— (—)	4 (2)	4 (2)	178 (80)
Utraula	588656	413	4 (3)	11 (8)	5 (3)	— (—)	5 (3)	3 (2)	115 (81)
Basti									
Bansi	418880	409	1 (1)	8 (8)	6 (6)	— (—)	2 (2)	4 (4)	82 (89)
Basti	572296	465	1 (1)	16 (13)	4 (3)	— (—)	5 (4)	5 (4)	93 (75)
Domariaganj	483451	374	— (—)	12 (9)	4 (3)	1 (1)	3 (3)	4 (3)	105 (81)
Naugarh	438721	375	— (—)	11 (9)	5 (4)	— (—)	1 (1)	3 (3)	96 (83)
Khalilabad	624586	468	— (—)	16 (12)	4 (3)	— (—)	5 (4)	6 (4)	102 (77)
Gorakhpur									
Gorakhpur	1149411	679	4 (2)	19 (11)	2 (1)	— (—)	6 (4)	5 (3)	134 (79)
Bansgaon	708188	512	— (—)	15 (11)	2 (1)	— (—)	5 (4)	5 (4)	111 (81)
Pharenda	506357	344	25 (17)	11 (7)	3 (2)	— (—)	3 (2)	5 (4)	100 (68)
Mahrajganj	374221	389	22 (13)	10 (6)	4 (2)	— (—)	4 (2)	3 (2)	130 (75)
Deoria									
Hata	660920	474	1 (1)	16 (12)	2 (1)	— (—)	4 (3)	9 (6)	108 (77)
Padrauna	728464	499	— (—)	13 (9)	4 (3)	— (—)	6 (4)	4 (3)	119 (81)

APPENDIX 2

Districtwise Livestock Population—1966

UTTAR PRADESH

(thousands)

District	cattle			buffaloes			sheep	goats	horses & ponies	mules	donkeys	camels	pigs	total livestock
	m	f	ys	m	f	ys								
Dehradun	58 (18)	51 (16)	51 (16)	1 (neg)	23 (7)	12 (4)	35 (11)	81 (26)	2 (1)	1 (neg)	— (—)	— (—)	3 (1)	318
Saharanpur	238 (27)	132 (13)	145 (17)	22 (3)	141 (16)	107 (12)	32 (4)	29 (3)	9 (1)	4 (neg)	2 (neg)	1 (neg)	18 (2)	881
Muzaffarnagar	182 (26)	83 (12)	89 (13)	45 (7)	131 (19)	105 (15)	15 (2)	13 (2)	7 (1)	1 (neg)	7 (1)	2 (neg)	17 (2)	697
Meerut	270 (26)	85 (8)	92 (9)	45 (4)	268 (26)	181 (17)	18 (2)	31 (3)	9 (1)	2 (neg)	14 (1)	5 (neg)	27 (3)	1047
Bulandshahr	227 (27)	61 (7)	61 (7)	12 (1)	233 (27)	152 (18)	19 (2)	42 (5)	6 (1)	1 (neg.)	14 (2)	5 (1)	19 (2)	852
Aligarh	201 (23)	59 (7)	56 (6)	27 (3)	246 (28)	164 (18)	38 (4)	53 (6)	8 (1)	3 (neg.)	18 (2)	2 (neg)	19 (2)	894
Uttar Kashi	38 (14)	37 (14)	26 (10)	2 (1)	22 (8)	7 (3)	75 (28)	57 (22)	1 (neg)	1 (neg)	— (—)	— (—)	neg (neg)	266
Lucknow	160 (30)	76 (14)	72 (13)	10 (2)	59 (11)	35 (6)	11 (2)	82 (15)	4 (1)	1 (neg)	0·3 (neg)	neg (neg)	25 (5)	536
Unnao	277 (27)	129 (13)	138 (13)	32 (3)	120 (11)	81 (8)	51 (5)	178 (17)	5 (neg)	— (—)	2 (neg)	neg (neg)	25 (3)	1048
Mathura	108 (16)	66 (10)	53 (8)	32 (5)	148 (23)	106 (16)	63 (10)	45 (7)	3 (1)	1 (neg)	12 (2)	2 (neg)	13 (2)	652
Agra	120 (15)	66 (8)	61 (8)	39 (5)	184 (23)	115 (15)	44 (6)	114 (15)	5 (1)	2 (neg)	12 (2)	5 (1)	16 (2)	783
Chamoli	77 (16)	82 (17)	57 (12)	3 (neg)	40 (8)	10 (2)	125 (25)	96 (20)	1 (neg)	1 (neg)	— (—)	— (—)	— (—)	492
Shahjahanpur	178 (22)	100 (12)	115 (14)	81 (10)	93 (11)	80 (10)	11 (1)	126 (16)	4 (1)	— (—)	1 (neg)	— (—)	22 (3)	811
Pilibhit	116 (29)	58 (15)	64 (16)	41 (10)	32 (8)	28 (7)	5 (1)	45 (11)	3 (1)	—	neg (neg)	—	8 (2)	400
Rampur	122 (31)	40 (10)	48 (12)	25 (7)	50 (13)	44 (11)	13 (3)	42 (11)	3 (1)	—	1 (neg)	—	3 (1)	319
Sultanpur	385 (35)	112 (11)	114 (10)	2 (neg)	111 (10)	65 (6)	56 (5)	210 (19)	4 (neg)	—	1 (neg)	1 (neg)	44 (4)	1115
Partapgarh	342 (31)	130 (12)	108 (10)	8 (1)	104 (10)	59 (6)	48 (4)	243 (22)	5 (neg)	—	2 (neg)	3 (neg)	45 (4)	1097
Bara Banki	297 (31)	121 (12)	108 (11)	5 (1)	115 (12)	73 (8)	8 (1)	198 (20)	6 (1)	1 (neg)	4 (neg)	neg (neg)	31 (3)	996
Rai Bareli	344 (28)	170 (14)	159 (13)	10 (1)	107 (9)	70 (6)	63 (5)	232 (19)	6 (neg)	—	2 (neg)	1 (neg)	61 (5)	1225
Sitapur	325 (23)	219 (16)	173 (12)	72 (5)	121 (9)	83 (6)	21 (2)	319 (23)	6 (neg)	neg (neg)	1 (neg)	neg (neg)	49 (4)	1389
Hardoi	359 (27)	160 (12)	173 (13)	43 (3)	140 (10)	102 (8)	49 (4)	249 (19)	6 (neg)	—	1 (neg)	1 (neg)	47 (4)	1330
Azamgarh	464 (34)	171 (13)	151 (11)	5 (neg)	125 (9)	80 (6)	73 (5)	257 (19)	3 (neg)	—	6 (1)	1 (neg)	32 (2)	1368
Nainital	129 (26)	104 (21)	90 (18)	18 (4)	65 (13)	42 (8)	2 (neg)	44 (9)	5 (1)	1 (neg)	1 (neg)	—	1 (neg)	502
Almora	170 (20)	138 (17)	115 (14)	5 (1)	115 (14)	39 (5)	42 (5)	198 (24)	2 (neg)	neg (neg)	—	—	—	824
Lakhimpur Kheri	263 (23)	213 (19)	151 (13)	104 (9)	94 (8)	63 (6)	30 (3)	210 (18)	5 (neg)	—	neg (—)	—	11 (1)	1144
Deoria	375 (32)	143 (12)	136 (11)	1 (neg)	86 (7)	63 (5)	44 (4)	304 (26)	2 (neg)	—	7 (1)	—	22 (2)	1183
Basti	646 (41)	183 (12)	165 (11)	3 (neg)	128 (8)	90 (6)	46 (3)	256 (16)	5 (neg)	—	8 (1)	—	37 (2)	1567

m = male
f = female
ys = youngstock
— = nil or negligible
neg = negligible

NOTE : Figures in brackets represent percentages to total livestock.

APPENDIX 2 (*Contd.*)

(thousands)

District	cattle			buffaloes			sheep	goats	horses & ponies	mules	don-keys	came-ls	pigs	total live-stock
	m	f	ys	m	f	ys								
Gharwal	128	157	138	5	45	17	56	208	1	neg	—	—	neg	755
	(17)	(21)	(18)	(1)	(6)	(2)	(7)	(28)	(neg)	(—)			(—)	
Tehri-Gharwal	92	63	46	6	75	22	34	104	1	1	—	—	(neg)	444
	(21)	(14)	(10)	(1)	(17)	(5)	(8)	(24)	(neg)	(neg)			(—)	
Pithorgarh	72	75	70	2	43	16	43	96	1	neg	—	—	—	418
	(17)	(18)	(17)	(1)	(10)	(4)	(10)	(23)	(neg)	(neg)				
Fatehpur	192	121	120	37	105	76	84	213	5	neg	3	1	49	1006
	(19)	(12)	(12)	(4)	(10)	(8)	(8)	(21)	(1)	(—)	(neg)	(—)	(5)	
Allahabad	459	212	181	22	157	86	162	295	10	neg	8	4	90	1686
	(27)	(13)	(11)	(1)	(9)	(5)	(10)	(18)	(1)	(—)	(neg)	(neg)	(5)	
Jhansi	301	239	216	4	93	64	196	243	2	neg	2	neg	—	1366
	(22)	(18)	(16)	(neg)	(7)	(5)	(14)	(18)	(neg)	(—)	(neg)	(—)	(—)	
Mainpuri	129	49	76	74	174	125	66	95	4	1	5	2	20	820
	(16)	(6)	(9)	(9)	(21)	(15)	(8)	(12)	(1)	(neg)	(1)	(neg)	(2)	
Etah	179	42	46	33	191	145	26	71	4	1	neg	neg	20	764
	(23)	(5)	(6)	(4)	(25)	(19)	(4)	(9)	(1)	(neg)	(1)	(—)	(3)	
Bareilly	213	87	116	49	90	78	9	89	8	—	neg	—	15	754
	(28)	(12)	(15)	(7)	(12)	(10)	(1)	(12)	(1)		(—)		(2)	
Farrukhabad	156	64	71	63	132	97	38	191	3	neg	4	1	23	841
	(18)	(8)	(8)	(7)	(16)	(12)	(5)	(23)	(neg)	(—)	(neg)	(neg)	(3)	
Itawah	82	70	107	133	121	93	52	178	3	neg	2	2	16	859
	(10)	(8)	(12)	(16)	(14)	(11)	(6)	(21)	(neg)	(—)	(neg)	(neg)	(2)	
Kanpur	190	176	174	102	158	104	46	265	4	neg	2	neg	31	1252
	(15)	(14)	(14)	(8)	(13)	(8)	(4)	(21)	(neg)	(—)	(neg)	(—)	(3)	
Bijnor	233	111	109	17	75	60	16	27	7	1	2	neg	16	674
	(35)	(17)	(16)	(3)	(11)	(9)	(2)	(4)	(1)	(neg)	(neg)	(—)	(2)	
Budaun	267	66	68	29	165	134	23	102	5	neg	2	neg	21	882
	(30)	(8)	(8)	(3)	(19)	(15)	(3)	(11)	(1)	(—)	(neg)	(—)	(2)	
Moradabad	346	108	119	34	148	130	22	49	7	neg	3	2	17	985
	(35)	(11)	(12)	(4)	(15)	(13)	(2)	(5)	(1)	(—)	(neg)	(neg)	(2)	
Faizabad	390	120	110	1	93	58	45	117	2	—	3	neg	31	970
	(40)	(13)	(11)	(neg)	(10)	(6)	(5)	(12)	(neg)		(neg)	(—)	(3)	
Gonda	557	292	207	13	144	89	51	188	5	neg	4	—	28	1578
	(35)	(19)	(13)	(1)	(9)	(6)	(3)	(12)	(neg)	(—)	(neg)		(2)	
Bahraich	346	286	188	76	127	83	50	313	7	neg	2	—	18	1496
	(23)	(19)	(13)	(5)	(9)	(5)	(3)	(21)	(1)	(—)	(neg)		(1)	
Ghazipur	220	108	98	neg	70	46	77	131	3	—	5	neg	9	767
	(29)	(14)	(13)	(—)	(9)	(6)	(10)	(17)	(neg)		(1)	(—)	(1)	
Ballia	157	121	108	neg	52	34	30	113	3	neg	5	neg	13	636
	(25)	(19)	(17)	(—)	(8)	(5)	(5)	(18)	(neg)	(—)	(1)	(—)	(2)	
Gorakhpur	454	152	150	1	97	66	36	220	3	—	7	—	39	1225
	(37)	(13)	(12)	(neg)	(8)	(5)	(3)	(18)	(neg)		(1)		(3)	
Varanasi	311	163	137	3	100	55	126	188	2	neg	6	2	14	1107
	(28)	(15)	(12)	(neg)	(9)	(5)	(12)	(17)	(neg)	(—)	(1)	(neg)	(1)	
Mirzapur	325	280	211	3	66	38	64	187	4	neg	2	1	7	1189
	(27)	(24)	(18)	(neg)	(6)	(3)	(5)	(16)	(neg)	(—)	(neg)	(neg)	(1)	
Jaunpur	354	139	110	7	107	59	115	140	3	—	3	3	23	1063
	(34)	(13)	(10)	(1)	(10)	(6)	(11)	(13)	(neg)		(neg)	(neg)	(2)	
Jalaun	120	76	74	4	69	49	41	113	2	neg	1	1	12	562
	(21)	(14)	(13)	(1)	(13)	(9)	(7)	(20)	(neg)	(neg)	(Neg)	(neg)	(2)	
Hamirpur	226	155	142	3	80	53	49	230	2	(neg)	1	neg	20	961
	(24)	(16)	(15)	(neg)	(8)	(6)	(5)	(24)	(neg)	(—)	(neg)	(—)	(2)	
Banda	259	220	173	14	115	74	31	217	7	2	2	1	16	1131
	(23)	(20)	(15)	(1)	(10)	(7)	(3)	(19)	(1)	(neg)	(neg)	(—)	(1)	

APPENDIX 3

Rainfall and Cropping Patteıns

UTTAR PRADESH

Cropping patterns	district/ taluk	geographical area (sq km)	elevation (masl)		annual rainfall		mmr	mr	md	consecutive months*		
			max	min	total (cm)	rd				a	b	c
	Rainfall Zone—I		..		..	..	..		*Rainfall Pattern—E_4 (C_3 E_1)E_4*			
	Mathura											
$W_3Ba_4G_4F_5B_4/JK_4$	Mathura	1054	204	170	54	34	8-7	33	19	7-3	44	25
	Mat	847	198	176	62	35	7-8	37	19	7-3	50	25
	Chhata	1041	262	198	56	33	8	33	18	7-3	44	24
$W_3G_4B_4Pu_4/F_5/O_4$	Sadabad	788	176	171	59	32	8	36	18	7-3	48	24
	Agra											
$W_3G_4B_4Pu_4/F_5/O_4$	Kiraoli	701	247	170					n. a.			
$W_4G_4B_4O_4$	Kheragarh	800	247	175	64	34	8	40	20	7-3	53	26
$B_4W_4G_4O_4$	Fatehabad	625	169	150	63	37	8	39	21	7-3	52	27
		5856										
	Rainfall Zone—II		..		..	..	..		*Rainfall Pattern—E_4 (C_3D_1)E_4*			
	Saharanpur											
$W_4Pd_4S_4F_4/M_4$	Nakur	1074	274	251	75	38	8-7	41	19	7-3	55	24
	Muzaffarnagar											
$W_3S_4F_4/Pd_4/M_4$	Kairana	1103	240	235	75	35	7-8	41	18	7-3	56	22
	Budhana	743	248	235	67	34	7	37	17	7-3	50	22
	Meerut											
$W_4S_4F_4G_4/M_4Pu_4$	Ghaziabad	1152	238	216	60	32	7	33	16	7-3	44	21
$W_3S_4F_4/M_4/Pd_4$	Hapur	1081	219	216	70	37	8-7	39	19	7-3	52	25
	Baghpat	1033	225	215	60	34	8-7	31	17	7-3	43	21
$W_3S_4F_4M_4$	Sikandrabad	1339	216	209	67	34	8	31	17	7-3	51	23
	Bulandshahr											
$W_3S_4M_4$	Bulandshahr	1222	219	216	65	35	8-7	37	18	7-3	49	23
$W_4M_4B_4Pu_4Ba_4$	Khurja	1175	208	201	63	34	7-8	36	18	7-3	48	23
	Aligarh											
$W_4M_4B_4Pu_4Ba_4/Pd_4/G_4$	Aligarh (Koil)	915	186	175	63	33	7-8	37	18	7-3	49	23
	Khair	1041	198	186	62	34	8	36	19	7-3	48	24
$W_3B_4M_5Ba_5$	Iglas	552	176	175	72	36	8-7	42	19	7-3	56	25
	Hathras	752	178	150	60	33	8-7	34	18	7-3	47	24
$W_4M_4B_4Pu_4Ba_4/Pd_4/G_4$	Sikandra Rao	871	175	150	65	35	8	38	19	7-3	51	25
	Mainpuri											
$W_4B_4G_4Pu_4/Pd_4/M_4$	Shikohabad	762	167	150	69	37	8-7	41	21	7-3	54	27
	Etah											
$W_4M_4B_4Pu_4/Pd_4$	Jalesar	589	174	168	60	33	7-8	36	19	7-3	49	25

masl = metres above sea level.
rd = annual number of rainy days.
mmr = month of maximum rainfall.
mr = total rainfall of mmr plus that of preceding or following month, which ever is higher, in cm.
md = number of rainy days of mmr plus that of preceding or following month, whichever has higher rainfall.
* = Consecutive months with rainfall of more than 10 cm per month.
a = Initial month with more than 10 cm of rainfall and number of consecutive months with more than 10 cm. per month separated by hyphen.
b = Total rainfall of consecutive months under 'a' in cm.
c = Total number of rainy days of consecutive months in 'a'
na = not available.

NOTE : 1. Information on rainfall and rainy days based on Memoirs of Indian Meteorological Department, Vol. XXXI, Part III.

2. For explanation of coded firm of rainfall and cropping patterns, reference may be made to section 2 in the text.

APPENDIX 3 (*Contd.*)

Cropping patterns	district/ taluk	geographical area (sq km)	elevation (masl)		annual rainfall		mmr	mr	md	consecutive months*		
			max	min	total (cm)	rd				a	b	c
	Rainfall Zone—II (Concld.)			..		..	..		*Rainfall Pattern*—E_4 (C_3D_1) E_4			
	Agra											
$W_3G_4B_4Pu_4/_5/O_4$	Etmadpur	723	169	150	65	36	8	40	21	7-3	52	27
	Ferozabad	526	169	150	67	35	8-7	41	20	7-3	53	26
	Agra	529	157	150	66	35	8-7	41	20	7-3	54	26
		17182										
	Rainfall Zone—III			..	..		..		*Rainfall Pattern*—$E_4(B_1C_2E_1)E_4$			
	Bulandshahr											
$W_4M_4S_4Pu_5$	Anupshahr	1158	209	190	74	36	8	43	20	7-3	57	25
	Budaun											
$W_3B_4M_4Gn_4Pu_4/G_5$	Gunnaur	935	180	168	67	36	7	41	20	7-3	53	25
	Aligarh											
$W_4M_4B_4Pu_4/Pd_4$	Atrauli	891	198	175	70	36	7	41	19	7-3	54	25
	Etah											
	Etah	1244	171	150	68	37	8	42	21	7-3	55	27
	Mainpuri											
$W_4B_4G_4Pu_4/Pd_4/M_4$	Jasrana	822	174	150	69	35	8-7	42	20	7-3	50	27
$W4/Pd_4M_4G_4/_5/B_5$	Mainpuri	1002	159	155	74	37	8-7	45	21	7-3	54	26
	Bhongaon	1183	158	150	73	39	8	44	21	7-3	58	28
	Karhal	565	167	150	73	37	8	44	21	7-3	59	27
		7800										
	Rainfall Zone—IV		..		..		..		*Rainfall Pattern*—$E_4(B_2C_1E_1)$ E_4			
	Saharanpur											
$W_4Pd_4S_4F_4/M_4$	Saharanpur	1244	957	270	94	44	7	51	21	7-3	67	27
$W_3S_4F_4/Pd_4$	Deoband	997	270	257	85	41	7-8	48	20	7-3	63	26
$W_4Pd_4S_4F_4/M_4$	Rorkee	1425	300	264	107	48	7	60	24	7-3	78	30
	Bijnor											
$W_4Pd_4S_4F_4/M_4$	Bijnor	1277	249	246	98	44	7-8	55	23	6-4	82	33
	Muzaffar Nagar											
$S_3W_4F_4$	Muzaffar Nagar	1183	252	245	84	40	7	46	21	7-3	62	26
	Jansath	1141	253	234	89	40	7-8	48	20	7-3	65	25
	Meerut											
$W_4S_4F_4G_4/M_4/Pu_4$	Meerut	705	238	219	81	41	7	44	20	7-3	59	26
$W_3S_4F_4/M_4/Pd_4$	Mawana	1067	258	238	84	40	7-8	44	20	7-3	60	26
	Sardhana	886	235	234	73	38	7	40	19	7-3	54	24
	Moradabad											
$W_3Pd_4S_4G_4/F_4/B_4$	Moradabad	770	205	197	98	44	7	57	23	6-4	85	33
	Amroha	993	218	215	100	42	8	58	21	6-4	87	32
$W_3M_4S_4Pd_5B_4/Gn_4$	Hasanpur	1464	212	192	82	39	7-8	47	20	7-3	63	26
	Sambhal	1216	207	195	82	40	7-8	47	21	7-3	62	27
$W_3Pd_4B_4S_4$	Bilari	862	195	193	91	43	7-8	54	22	7-3	69	29
	Rampur											
$W_4Pd_4S_4G_4$	Shahbad	433	187	167	na							
	Budaun											
$W_3B_4M_4Gn_4Pu_4/G_5$	Budaun	1175	177	168	85	42	7	49	23	7-3	65	29
$W_4Pd_4G_4Pu_5S_5/B_5$	Dataganj	1088	186	152	90	43	7	54	23	7-3	71	30
$W_3B_4M_4Gn_4Pu_4/G_4$	Sahaswan	1095	185	177	82	40	8	48	21	7-3	63	28
	Bisauli	932	194	185	86	43	7-8	51	23	7-3	66	30
	Bareilly											
$W_4B_4G_4Gm_4Pu_5M_5$	Aonla	823	178	166	98	45	7-8	57	24	7-3	75	31

APPENDIX 3 (*Contd.*)

Cropping patterns	district/ taluk	geographical area (sq km)	elevation (masl)		annual rainfall		mmr	mr	md	consecutive months*		
			max	min	total (cm)	rd				a	b	c
	Rainfall Zone—IV (Contd.)			..	..	..	..			*Rainfall Pattern—$E_4(B_2C_1E_1)E_4$*		
	Shajahan Pur											
$W_4Pd_4G_4S_4$	Tilhar	1073	157	150	97	44	7	57	24	6-4	84	35
$W_4Pd_4G_4Pu_5S_5/B_5$	Jalalabad	946	152	150	86	42	8-7	51	23	7-3	66	30
	Etah											
$W_4B_4M_4Pu_4$	Kasganj	1275	175	150	72	38	8-7	43	20	7-3	57	27
$W_4B_4M_4Gn_5G_5/Pd_5/Pu_5$	Aliganj	1337	171	150	78	38	8	46	21	7-3	62	28
	Farrukhabad											
$W_3M_4G_5\ V_4/V_5B_5$	Farrukhabad	1243	158	150	79	39	7-8	48	22	7-3	64	28
	Kaimganj	949	169	150	78	39	8	46	22	7-3	61	28
$W_4M_4Pd_4G_4$	Chhibramam	1082	152	150	77	41	8-7	46	22	7-3	62	30
$W_4M_4Pd_4Gn_4Ba_4/G_4$	Kannauj	1015	152	150	79	39	7	47	22	7-3	64	29
	Hardoi											
$W_4Pd_4G_4Gn_4Ba_4$	Hardoi	1638	142	139	97	44	7	56	24	6-4	85	35
$W_3Pd_4Gn_4/S_4$	Shahabad	1395	150	143	88	42	7	52	22	7-3	69	30
$W_4Gn_4G_4Ba_4M_4/Pd_4$	Bilgram	1518	152	150	76	39	7	47	22	7-3	61	29
	Sandila	1439	137	132	89	43	7	53	24	7-3	70	31
	Agra											
$B_4G_4T_4$	Bah	875	170	150	73	40	7	46	22	7-3	59	29
	Etawah											
$W_4B_4M_4Pd_4G_4$	Etawah	1107	151	150	75	39	8	48	23	7-3	62	29
	Bharthana	1079	159	153	71	39	8	45	23	7-3	59	29
$W_4Pd_4B_4M_4$	Bidhuna	1108	153	150	80	41	8	48	23	7-3	65	30
$W_4B_4Pd_4G_4M_4/O_4/Ba_4$	Auraiya	1075	153	141	74	40	8-7	46	22	7-3	60	29
	Jalaun											
$G_3W_4B_4/Jk_4/T_4$	Jalaun	1330	157	145	79	43	8	51	25	7-3	65	32
	Kalpi	1257	133	126	86	44	8	55	25	7-3	70	32
G_3W_3	Konch	1043	213	150	76	42	8	49	25	7-3	62	32
	Orai	927	150	135	72	40	8-7	47	24	7-3	59	30
	Kanpur											
$W_4Pd_4Ba_4G_4Jk_4$	Kanpur	1042	138	131	80	42	8-7	49	24	7-3	65	31
	Bilhaur	1015	137	135	83	40	7	50	23	7-3	66	29
$W_4Pd_4G_4Ba_4JK_4/M_4/(M_4B_4)$	Akbarpur	956	134	130	74	40	8	46	24	7-3	60	30
$W_4B_4Pd_4G_4M_4/O_4\ (M_4B_4)$	Derapur	1046	141	134	76	40	8	46	23	7-3	61	29
$G_4W_4B_4Ba_4Pd_4/T_4$	Bhognipur	981	134	133	82	40	8	51	24	7-3	66	30
$G_4W_4Pd_4Jk_4Ba_4$	Ghatampur	1104	131	130	78	42	8	48	24	7-3	64	31
	Unnao											
$Pd_4W_4Ba_4Jk_4$	Purwa	1412	131	129	85	45	7	52	26	7-3	69	33
$W_4Pd_4Ba_4G_4Jk_4/M_4$	Unnao	1016	138	129	81	43	7-8	50	24	73	66	32
$W_4Pd_4Ba_4G_4Jk_4/M_4$	Hasangaj	1114	131	129	85	43	7	51	25	7-3	68	32
	Safipur	1061	137	135	84	43	8-7	51	24	7-3	67	31
	Lucknow											
	Malihabad	848	127	125	89	44	7	52	24	7-3	70	32
$W_4Pd_4G_4B_5S_5Jk_5$	Lucknow	926	129	120	102	48	7	60	27	7-3	81	35
$W_4Pd_4G_4B_5S_5Jk_5$	Mohanlalganj	700	131	117	92	45	7	55	25	7-3	73	33
	Barabanki											
$Pd_3W_4G_4$	Fatehpur	1298	124	119	95	45	7	53	24	7-3	73	32
$Pd_3W_4G_4Pu_5$	Haidargarh	751	117	113	94	47	7	56	26	7-3	75	35
	Sitapur											
$W_4Pd_4G_4S_5$	Sidhauli	1419	132	131	89	44	7	51	24	7-3	68	31
$W_4Pd_4M_4S_5$	Biswan	1463	130	121	106	46	7	60	24	6-4	92	37
	Sultanpur											
$Pd_3W_4Ba_4Pu_4/G_4/M_4$	Sultanpur	1315	100	93	100	51	7	59	28	7-3	80	37
$Pd_3W_4G_4Pu_5$	Musafirkhana	1028	105	93	96	49	8-7	56	27	7-3	75	36
$Pd_3W_4Ba_4Pu_4G_4/M_4$	Amethi	948	105	94	96	49	7	58	27	7-3	77	36
	Faizabad											
$Pd_3W_4G_4Ba_4/Pu_4$	Akbarpur	1391	100	94	97	47	7	56	25	7-3	75	34

APPENDIX 3 (*Contd.*)

Cropping patterns	district/ taluk	geographical area (sq km)	elevation (masl)		annual rainfall		mmr	mr	md	consecutive months*		
			max	min	total (cm)	rd				a	b	c
	Rainfall Zone—IV (Contd.)			..	..	..	..		*Rainfall Pattern—E_4 ($B_2C_1E_1$)E_4*			
	Rae Bareilly											
$Pd_3W_4G_4Pu_5$	Maharaj-ganj	1205	122	120	90	45	7	54	25	7-3	62	33
$Pd_4W_4Ba_4Jk_4Pu_4$	Rae Bareilly	947	122	109	92	47	7	56	27	7-3	74	35
	Rae Bareli											
$Pd_3W_4Ba_4Pu_4/Jk_4$	Salon	1150	118	113	98	47	8	60	27	7-3	78	35
$Pd_4W_4Ba_4Jk_4/Pu_4$	Dalmau	1256	117	110	91	47	7	57	27	7-3	70	34
	Fatehpur											
$Pd_4W_4Ba_4G_4$	Fatehpur	1662	117	111	86	47	7	55	26	7-3	70	34
$G_4W_4Ba_4Pd_4Jk_4$	Bindki	1295	124	119	na							
$Pd_4W_4Ba_4G_4$	Khaga	1252	112	112	93	46	8-7	58	26	7-3	76	34
	Hamirpur											
$G_3W_4Jk_4/T_4$	Hamirpur	1078	150	119	87	43	8	56	25	7-3	71	32
G_3W_3	Maudaha	1565	150	118	83	44	8	63	26	7-3	68	33
$G_3W_4Jk_4$	Mehoba	1451	349	150	93	47	7	60	27	7-3	75	35
	Charkhari	1456	351	150	89	45	7-8	57	26	7-3	71	33
	Rath	1632	194	150	92	46	7-8	59	26	7-3	75	34
	Jhansi											
G_3W_3	Moth	1168	322	300	85	43	8-7	55	25	7-3	70	32
$G_3W_4Jk_4$	Garautha	1519	301	213	87	45	7	56	26	7-3	71	33
	Mauranipur	1085	411	300								
	Allahabad											
$G_4Pd_4Ba_4B_4$	Allahabad (chail)	801	107	96	95	47	8-7	59	27	7-3	77	35
$Ba_4Pd_4W_4B_4G_4$	Phulpur	750	96	90	97	48	7-8	59	27	7-3	78	35
$Pd_4W_4B_4Ba_4Pu_5/G_4$	Soraon	682	107	96	99	47	7	60	27	7-3	79	35
	Karchhana	1349	190	150	98	49	8-7	60	27	7-3	77	35
$G_4Pd_4Ba_4B_4$	Manjhanpur	705	173	150	90	47	8	56	27	7-3	73	35
	Sirathu	603	118	112	97	46	8	61	26	7-3	80	34
	Banda											
$G_4Jk_4B_4T_4$	Mau	822	173	150	95	48	8-7	58	28	7-3	76	36
	Jaunpur											
$Pd_3W_4Ba_4M_4$	Machhli Shahr	916	107	94	96	49	7	60	28	7-3	77	36
$Pd_4W_4Ba_4M_4$	Mariahu	818	94	90	99	49	7-8	59	28	7-3	80	36
	Shahganj	903	90	75	97	48	7-8	58	27	7-3	78	36
		96391										
	Rainfall Zone—V		..	..	..	..	..	..	*Rainfall Pattern—E_4 (B_2C_2) E_4*			
	Azamgarh											
$Pd_3Ba_4Pu_4W_4/S^4/_5/T4$	Ghosi	998	76	75	100	49	7-	59	26	6-4	88	41
	Sagri	942	79	74	103	49	7-8	59	26	6-4	90	40
$Pd_3Ba_4Pu_4$	Mohammada-bad	928	81	76	100	50	8-7	58	26	6-4	89	41
	Kheri											
$Pd_4W_4S4G_4/M_4$	Lakhimpur	2380	163	132	107	47	7	58	24	6-4	92	37
	Mahamdi	1656	155	150	98	45	7-8	54	23	6-4	85	36
	Sitapur											
$W_4Pd_4G_4S_4/Gn_4\ Ba_4$	Sitapur	1309	148	138	97	45	7-8	54	24	6-4	84	36
	Misrikh	1525	144	139	98	45	7-8	56	24	6-4	86	36
	Ghazipur											
$Pd_4W_4Ba_4G_4$	Zamania	760	78	75	97	46	8	55	25	6-4	85	38
		10498										
	Rainfall Zone—VI			..	..	..	..	..	*Rainfall Pattern—E_4(B_2C_1)E_4*			
	Ballia											
$Pd_3Ba_4Pu_4W_4/S_5/M_4$	Rasra	1096	75	73	104	52	8	60	28	6-4	92	43
$Pd_4W_4Ba_4M4G_4$	Bansdih	986	63	58	101	51	7-8	57	26	6-4	89	42
		2082										

APPENDIX 3 (*Contd.*)

Cropping patterns	district/ taluk	geographical area (sq km)	elevation (masl) max	elevation (masl) min	annual rainfall total (cm)	annual rainfall rd	mmr	mr	md	consecutive months* a	consecutive months* b	consecutive months* c
	Rainfall Zone—VII		..		..		..		*Rainfall Pattern—E_4 (B_3C_1) D_1E_3*			
	Deoria											
$Pd_4W_4Ba_4Mt_4$	Salempur	1284	78	74	101	51	8-7	48	25	6-4	85	41
	Deoria	1252	78	75	106	52	8-7	58	27	6-4	82	42
		2536										
	Rainfall Zone—VIII		..		..		..		*Rainfall Pattern—E_4 ($A_1B_1C_1E_1$)E_4*			
	Jhansi											
$W_3M_4Jk_4C_4Pu_4$	Jhansi	1163	352	300	94	45	7-8	61	27	7-3	77	34
$W_3Jk_4Mt_4$	Lalitpur	2742	366	300	98	48	7	63	27	7-3	63	35
	Mahroni	2125	556	300	103	48	7	66	29	7-3	83	36
	Pratapgarh											
$Pd_3W_4Ba_4Pu_4$	Kunda	1383	116	111	97	47	8	61	27	7-3	78	35
	Patti	1177	100	94	97	48	7	59	27	7-3	78	35
$Pd_4W_4Ba_4Pu_4B_4G_4$	Belha	1118	102	91				na				
	(Pratapgarh)	9708										
	Rainfall Zone—IX		..		..		..		*Rainfall Pattern—E_4($A_1B_1C_2$)E_4*			
	Bareilly											
$W_4Pd_4S_4Gn_4/G_5/Pu_5$	Faridpur	639	181	166	100	44	7-8	59	23	6-4	87	35
	Bareilly	1095	167	166	108	47	7	61	25	6-4	93	37
	Shahjahanpur											
$W_4Pd_4C_4Pu_5S_5/B_5$	Shahjahanpur	1022	154	150	106	46	7	61	25	6-4	92	37
$W_4Pd_4S_4G_4$	Powayan	1532	183	164	111	46	7	63	25	6-4	97	37
	Rampur											
$W_4Pd_4M_4G_4$	Rampur	446	193	187				na				
	Milak	407	193	167				na				
	Suar	591	211	187				na				
		5732										
	Rainfall Zone—X		..		..		..		*Rainfall Pattern—E_4($A_1B_2C_1$)E_4*			
	Barabanki											
$Pd_3W_4G_4Pu_5$	Nawabganj	927	123	114	106	49	7	62	27	6-4	94	40
$Pd_3W_4G_4/Ba_4/Pu_4$	Ramsanehi Ghat	1513	119	113	106	48	8-7	62	26	6-4	93	39
	Faizabad											
	Faizabad	891	181	97	105	48	7	62	27	6-4	93	40
	Bikapur	1184	105	96	106	51	7	61	27	6-4	94	42
	Tanda	911	97	88	104	50	7	60	27	6-4	92	41
	Azamgarh											
$Pd_3Ba_4Pu_4W_4S^4/_5/T_4$	Phulpur	1153	79	76	106	50	7	62	27	6-4	94	42
	Azamgarh	811	79	76	106	52	7	60	27	6-4	93	42
$Pd_3Ba_4Pu_4$	Lalganj	915	82	81	98	48	8	58	26	7-3	78	34
	Jaunpur											
$Ba_4M_4Pd_4W_4$	Jaunpur	721	90	82	103	52	7-8	60	29	7-3	83	38
	Kerakat	623	82	75	105	51	8	60	28	6-4	92	42
	Ghazipur											
$Pd_4Ba_4W_4B_4Pu_5/B_5$	Saidpur	1097	82	75	110	50	8	64	28	6-4	97	41
$Pd_4W_4Ba_4Pu_4/G_4$	Ghazipur	665	78	75	107	51	8	62	27	6-4	95	42
$Pd_4W_4Ba_4G_4Pu_4$	Muhammadabad	810	75	73	107	50	8	61	27	6-4	94	42
	Ballia											
$G_4W_4Pd_4Ba_4M_4/Pu_4$	Ballia	1150	58	58	110	54	8	63	28	6-4	97	44
	Basti											
$Pd_3W_4Pu_4/Ba_4$	Harraiya	1227	98	93	113	52	7	61	28	6-4	99	43

APPENDIX 3 (*Contd.*)

Cropping patterns	district/ taluk	geographical area (sq km)	elevation (masl) mix	elevation (masl) min	annual rainfall total (cm)	annual rainfall rd	mmr	mr	md	consecutive months* a	consecutive months* b	consecutive months* c
	Rainfall Zone—X (Concld.)			..		..		..	*Rainfall Pattern—$E_4(A_1B_2C_1)E_4$*			
	Sultanpur											
$Pd_3W_4Ba_4Pu_4G_4/M_4$	Kadipur	1160	100	94	109	51	7	65	28	7-3	87	37
		15758										
	Rainfall Zone—XI			..		..		..	*Rainfall Pattern—$E_4(A_2C_1E_1)E_4$*			
	Banda											
G_3W_4	Banda	1617	128	118	97	45	8-7	62	27	7-3	79	34
$G_3W_4Pd_4$	Baberu	1581	141	118	99	45	8	65	26	7-3	82	34
	Naraini	1354	378	150				na				
$G_3W_4Jk_4T_4/Pd_4$	Karwi	2121	238	150	103	47	8	66	28	7-3	84	35
	Allahabad											
$Pd_4W_4Ba_4B_4G_4/Pu_{4/5}$	Handia	772	96	94	99	48	7	61	27	7-3	79	35
$Pd_4W_4G_4Ba_4$	Meja	1715	354	152	107	50	7	67	29	7-3	85	37
	Varanasi											
$Pd_4Ba_4W_4B_4G_4/Pu_{4/5}$	Gyanpur	1079	92	90				na				
$Pd_4Ba_4W_4Pu_5S_5B_5$	Varanasi	1525	82	75	108	52	8	64	30	7-3	84	39
$Pd_3W_4G_5Ba_4/Pu_4/Mt_4$	Chandauli	1271	80	75	107	52	8	64	28	7-3	85	37
$Pd_3W_4G_5$	Chakia	584	383	150				na				
	Mirzapur											
$Pd_4W_4Ba_4G_4B_4Mt_4$	Mirzapur	3067	220	150	104	52	8	65	29	7-3	83	38
$Pd_3W_4G_5Pu_4/Mt_4/Ba_4$	Ghunar	1455	316	150	110	53	8	67	29	7-3	87	38
		18141										
	Rainfall Zone—XII			..		..		..	*Rainfall Pattern—$E_4(A_2C_2)E_4$*			
	Mirzapur											
$Pd_3W_4G_5Pu_4/Mt_4$	Robertsganj	2644	643	150	118	60	8	72	33	6-4	103	49
$Mt_3Pd_4Ba_4/M_4$	Dudhi	1919	557	300	113	62	8	66	33	6-4	98	49
	Bijnor											
$Pd_4W_4S_4$	Dhampur	1185	248	236	111	46	7-8	64	24	6-4	95	35
	Moradabad											
$Pd_4W_4S_4/G_4$	Thakurdwara	622	238	205	114	48	7	64	25	6-4	98	37
		6370										
	Rainfall Zone—XIII			..		..		..	*Rainfall Pattern—$E_4(A_2B_1C_1)E_4$*			
	Rampur											
$W_4Pd_4S_4M_4/F_4/Pu_5$	Bilaspur	487	211	193				na				
	Dehradun											
$W_4Pd_4S_4M_4/F_4/Pu_5$	Dehradun	1086	2610	300	205	78	8	129	40	6-4	176	59
	Bijnor											
	Nazjibabad	1011	877	249	117	50	7-8	69	26	6-4	96	38
$Pd_4W_4S_4$	Nagina	1156	829	248	110	48	7	64	25	6-4	95	36
	Nainital											
$Pd_3W_4S_4/G_4/M_4$	Kashipur	423	300	211	128	49	8-7	73	25	6-4	111	38
$W_4Pd_4S_4M_4/F_4/Pu_5$	Kichha	326	256	207				na				
$Pd_3W_4S_4/G_4/M_4$	Khatima	344	300	207	156	62	7	90	32	6-4	137	50
	Bareilly											
$Pd_3W_4S_4/G_4/M_4$	Baheri	945	207	187	126	51	7	74	27	6-4	110	40
	Nawabganj	572	187	181	114	49	7	64	26	6-4	98	39
	Pilibhit											
	Pilibhit	940	191	181	128	53	7	74	28	6-4	111	42
$W_4Pd_4S_4M_4/F_4/Pu_5$	Piranpur	1216	189	176	129	52	7	74	27	6-4	113	42
$Pd_3W_4S_4/G_4/M_4$	Bisalpur	942	181	173	114	48	7	66	26	6-4	99	38
	Lakhimpur											
$Pd_4W_4M_4S_4$	Nighasan	2452	157	150	116	52	7	64	26	6-4	100	41

APPENDIX 3 (*Contd.*)

Cropping patterns	district/ taluk	geographical area (sq km)	elevation (masl) max	elevation (masl) min	annual rainfall total	annual rainfall rd	mmr	mr	md	consecutive months* a	consecutive months* b	consecutive months* c
	Rainfall Zone—XIII (Concld.)		..	..	..	..	..	..	*Rainfall Pattern—$E_4(A_2C_1E_1)$ E_4*			
	Bahraich											
$Pd_3W_4S_4/G_4/M_4$	Nanpara	2127	131	120	116	50	7	63	24	6-4	100	39
		14027										
	Rainfall Zone—XIV		..	..	..	..	..	*Rainfall Pattern—$E_4(A_2B_1C_1)D_1E_3$*				
	Bahraich											
$Pd_3W_4M_4$	Bahraich	2136	120	116	118	50	8	65	25	6-4	102	39
$M_3W_4Pd_4$	Kaisarganj	1767	123	121	107	48	7	59	25	6-4	94	39
	Gonda											
$Pd_3W_4M_4/Pu_4$	Gonda	1607	105	104	122	49	7	69	27	6-4	108	41
$M4W_4Pd_4$	Tarabganj	1655	101	95	110	51	7	62	28	6-4	96	42
$Pd_3W_4M_4/Pu_4$	Balrampur	2238	112	107				na				
$Pd_3W_4M_4/Pu_4$	Utraula	1425	105	92	119	52	7	67	27	6-4	103	42
	Basti											
$Pd_3W_4Ba_4/Pu_4$	Basti	1231	88	75	120	54	7	67	28	6-4	101	44
	Bansi	1023	89	87	134	55	7	76	28	6-4	117	44
Pd_2W_4	Domariaganj	1292	97	89	146	53	7	79	27	6-4	125	43
	Naugarh	1171	102	86				na				
$Pd_3W_4Ba_4/Pu_4$	Khalilabad	1334	84	78	119	54	7	69	28	6-4	104	44
	Gorakhpur											
$Pd_3W_4Mt_4/Ba_4$	Gorakhpur	1693	81	78	125	57	7	70	29	6-4	109	46
$Pd_4W_4Ba_4Mt_4$	Bansgaon	1383	82	78	110	53	8	65	28	6-4	96	43
Pd_2W_4	Pharenda	1472	95	87	185	56	7	102	29	6-4	159	46
	Maharajganj	1734	97	91	136	57	7	74	28	6-4	118	45
	Deoria											
$Pd_3W_4S_4/Mt_4$	Hata	1394	95	86	126	56	7	69	29	6-4	110	45
$W_3Pd_4S_4$	Padrauna	1461	83	75	125	55	7	68	28	6-4	108	45
		26016										

APPENDIX 4

Area under Principal Crops

UTTAR PRADESH

District/taluk	Gca	Paddy	Jowar kharif	Jowar rabi	Bajra	Maize	Ragi	Wheat	Barley	Millets	Gram	Tur	Pulses	Sugar cane	Gro-und-nut	O se d:
	Rainfall Zone—I			..			..		..		..			..		*Rain*
Mathura																
Mathura	105	2 (2)	8 (8)	— (—)	11 (10)	1 (1)	— (—)	37 (35)	9 (8)	— (—)	12 (11)	2 (2)	4 (4)	7 (7)	— (—)	1 (1)
Mat	93	1 (1)	1 (1)	— (—)	14 (15)	5 (5)	— (—)	29 (31)	10 (11)	— (—)	7 (8)	3 (3)	7 (8)	5 (5)	— (—)	2 (2)
Chhata	105	2 (2)	11 (10)	— (—)	4 (4)	2 (2)	— (—)	32 (36)	14 (14)	— (—)	11 (10)	2 (2)	6 (5)	6 (6)	— (—)	1 (1)
Sadabad	93	1 (2)	— (—)	— (—)	24 (25)	2 (3)	— (—)	33 (35)	6 (6)	— (—)	7 (8)	3 (3)	7 (7)	2 (2)	— (—)	1 (1)
Agra																
Kiraoli	85	1 (1)	3 (3)	— (—)	10 (12)	— (—)	— (—)	26 (31)	3 (3)	— (—)	12 (15)	3 (4)	11 (13)	2 (2)	— (—)	
Kheragarh	88	— (—)	1 (1)	— (—)	13 (15)	— (—)	— (—)	18 (20)	1 (1)	— (—)	13 (15)	4 (4)	6 (7)	2 (2)	— (—)	
Fatehabad	66	— (—)	— (—)	— (—)	16 (24)	— (—)	— (—)	12 (18)	4 (6)	— (—)	10 (15)	6 (9)	3 (5)	1 (1)	— (—)	
	Rainfall Zone—II			..			..		..		..			..		
Saharanpur																
Nakur	116	16 (14)	— (—)	— (—)	4 (3)	11 (9)	— (—)	38 (33)	1 (1)	1 (1)	3 (3)	— (—)	3 (2)	17 (15)	— (—)	(—
Muzaffarnagar																
Kairana	127	13 (10)	— (—)	— (—)	1 (—)	9 (7)	— (—)	39 (30)	— (—)	— (—)	4 (3)	— (—)	3 (3)	29 (23)	— (—)	(—
Budhana	89	5 (6)	— (—)	— (—)	1 (1)	8 (9)	— (—)	27 (30)	— (—)	— (—)	4 (5)	— (—)	2 (2)	23 (26)	— (—)	(—
Meerut																
Ghaziabad	133	10 (7)	1 (1)	— (—)	5 (4)	13 (10)	— (—)	40 (30)	2 (2)	— (—)	6 (4)	— (—)	13 (14)	14 (11)	— (—)	(—
Hapur	132	4 (3)	— (—)	— (—)	4 (3)	19 (15)	— (—)	41 (31)	2 (1)	— (—)	4 (3)	1 (1)	5 (3)	26 (20)	— (—)	(
Baghpat	126	4 (3)	— (—)	— (—)	2 (2)	12 (10)	— (—)	42 (33)	— (—)	— (—)	4 (3)	1 (1)	4 (3)	29 (23)	— (—)	(
Bulandshahr																
Bulandshahr	144	2 (2)	2 (2)	— (—)	2 (2)	29 (20)	— (—)	53 (37)	5 (3)	— (—)	5 (3)	— (—)	5 (3)	19 (13)	— (—)	(
Sikandrabad	146	3 (2)	3 (2)	— (—)	11 (7)	21 (14)	— (—)	55 (38)	7 (5)	— (—)	4 (3)	— (—)	11 (7)	12 (8)	— (—)	(
Khuria	125	2 (2)	4 (3)	— (—)	11 (9)	19 (15)	— (—)	31 (25)	12 (10)	— (—)	11 (9)	— (—)	12 (9)	5 (4)	— (—)	(

Gca=gross cropped area Mc=miscellaneous crops L=Plantation crops

NOTE 1: Figures in brackets represent percentages to gross cropped area. These have been rounded off individually and hence cross totals may n

APPENDIX 4 (*Contd.*)

District/taluk	Gca	Paddy	Jowar Kharif	Jowar rabi	Bajra	Maize	Ragi	Wheat	Barley	Millets	Gram	Tur	Pulses	Sugar cane	Groundnut	Oil see
	Rainfall Zone—II (Contd.)					..		..		..		..		..		*R*
Aligarh																
Aligarh (Koil)	100	5 (5)	1 (1)	— (—)	12 (12)	15 (15)	— (—)	28 (28)	8 (8)	— (—)	5 (5)	1 (1)	10 (10)	5 (5)	— (—)	- (—
Khair	118	2 (2)	2 (2)	— (—)	12 (10)	18 (15)	— (—)	37 (31)	10 (8)	— (—)	8 (6)	2 (2)	8 (6)	8 (6)	— (—)	- (—
Iglas	70	1 (1)	— (—)	— (—)	15 (21)	4 (6)	— (—)	24 (35)	6 (9)	— (—)	4 (6)	1 (1)	6 (9)	3 (4)	— (—)	- (—
Hathras	87	2 (3)	— (—)	— (—)	21 (24)	7 (8)	— (—)	33 (38)	6 (7)	— (—)	5 (6)	2 (3)	— (—)	2 (2)	— (—)	- (—
Sikandra Rao	91	7 (8)	1 (1)	— (—)	9 (10)	14 (15)	— (—)	25 (27)	7 (8)	— (—)	6 (7)	1 (1)	10 (9)	4 (4)	— (—)	- (—
Mainpuri																
Shikohabad	76	6 (8)	1 (1)	— (—)	14 (18)	6 (8)	— (—)	19 (25)	3 (4)	— (—)	10 (13)	4 (5)	6 (8)	1 (1)	— (—)	
Etah																
Jalesar	72	5 (7)	— (—)	20 (28)	— (—)	7 (9)	— (—)	21 (30)	3 (4)	— (—)	5 (7)	— (—)	3 (4)	1 (1)	— (—)	
Agra																
Etmadpur	82	1 (1)	— (—)	— (—)	18 (22)	3 (3)	— (—)	21 (25)	5 (6)	— (—)	8 (10)	5 (6)	8 (10)	0·4 (1)	— (—)	
Ferozabad	57	1 (2)	— (—)	— (—)	12 (21)	3 (5)	— (—)	17 (30)	3 (5)	— (—)	6 (10)	3 (5)	3 (5)	0·3 (1)	— (—)	
Agra	59	1 (2)	1 (2)	— (—)	11 (19)	— (—)	— (—)	19 (33)	2 (3)	— (—)	5 (8)	2 (3)	6 (10)	1 (2)	— (—)	
	Rainfall Zone—III			..		..		..		..		..		..		*Rainfall*
Bulandshahr																
Anupshahr	132	3 (2)	1 (1)	— (—)	7 (5)	30 (23)	— (—)	39 (30)	8 (6)	— (—)	6 (4)	2 (2)	8 (6)	15 (12)	— (—)	— (—
Budaun																
Gunnaur	78	3 (4)	1 (1)	— (—)	17 (21)	7 (8)	— (—)	22 (28)	4 (5)	— (—)	3 (4)	3 (4)	6 (8)	3 (4)	6 (8)	- (—
Aligarh																
Atrauli	108	2 (2)	— (—)	— —)	20 (18)	17 (16)	— (—)	23 (21)	8 (7)	— (—)	7 (6)	4 (4)	13 (12)	5 (5)	1 (1)	— (—
Etah																
Etah	113	11 (10)	2 (2)	— (—)	16 (14)	19 (17)	— (—)	32 (27)	6 (5)	— (—)	9 (8)	4 (4)	8 (7)	2 (2)	1 (1)	- (—
Mainpuri																
Jasrena	75	8 (11)	1 (1)	— (—)	9 (12)	10 (13)	— (—)	24 (32)	4 (6)	— (—)	7 (9)	3 (4)	2 (2)	1 (1)	— (—)	(
Mainpuri	74	12 (16)	3 (4)	— (—)	6 (8)	11 (15)	— (—)	18 (24)	4 (6)	— (—)	8 (11)	2 (2)	4 (6)	1 (1)	2 (3)	- (-
Bhangaon	110	14 (12)	5 (5)	— (—)	8 (7)	19 (17)	— (—)	29 (26)	4 (4)	— (—)	6 (6)	3 (3)	7 (6)	1 (1)	8 (7)	- (-
Karhal	53	13 (25)	1 (2)	— (—)	4 (7)	7 (13)	— (—)	16 (30)	1 (2)	— (—)	4 (7)	2 (4)	2 (4)	1 (2)	— (—)	(

Rainfall Zone—IV *Rainfall Pattern—$E_4(B_2C_1E_1)$ E_4*

Saharanpur																				
Saharanpur	140	22 (16)	— (—)	— (—)	3 (2)	15 (11)	— (—)	36 (26)	— (—)	1 (—)	9 (7)	2 (1)	2 (1)	16 (12)	10 (7)	— (—)	1 (1)	— (—)	20 (14)	3 (2)
Deoband	127	26 (20)	— (—)	— (—)	1 (1)	2 2	— (—)	38 (30)	— (—)	— (—)	3 (2)	— (—)	3 (2)	28 (22)	— (—)	— (—)	1 (1)	— (—)	23 (18)	2 (2)
Roorkee	145	24 (16)	— (—)	— (—)	3 (2)	10 (7)	— (—)	37 (26)	1 (—)	1 (1)	8 (6)	2 (1)	3 (2)	32 (22)	1 (1)	— (—)	1 (1)	— (—)	22 (15)	— (—)
Bijnor																				
Bijnor	114	14 (12)	— (—)	— (—)	5 (4)	1 (1)	— (—)	33 (29)	2 (2)	— (—)	3 (3)	2 (2)	4 (3)	24 (21)	8 (7)	— (—)	— (—)	— (—)	11 (10)	7 (6)
Muzaffarnagar																				
Muzaffarnagar	133	15 (11)	— (—)	— (—)	— (—)	4 (3)	— (—)	39 (29)	— (—)	— (—)	3 (2)	— (—)	2 (2)	38 (29)	— (—)	— (—)	1 (1)	— (—)	26 (20)	5 (3)
Jansath	114	9 (8)	1 (1)	— (—)	2 (2)	2 (2)	— (—)	34 (30)	— (—)	— (—)	3 (3)	— (—)	4 (3)	37 (32)	— (—)	— (—)	1 (1)	— (—)	19 (17)	2 (1)
Meerut																				
Meerut	83	4 (5)	— (—)	— (—)	2 (2)	5 (6)	— (—)	21 (25)	— (—)	— (—)	6 (7)	— (—)	4 (5)	18 (22)	— (—)	— (—)	1 (1)	— (—)	17 (21)	5 (6)
Mawana	107	3 (3)	— (—)	— (—)	4 (4)	8 (7)	— (—)	31 (29)	1 (1)	— (—)	4 (4)	— (—)	5 (4)	30 (28)	— (—)	— (—)	1 (1)	— (—)	15 (14)	5 (5)
Sardhana	106	5 (5)	— (—)	— (—)	1 (1)	8 (8)	— (—)	32 (30)	— (—)	— (—)	5 (5)	— (—)	3 (3)	29 (27)	— (—)	— (—)	2 (2)	— (—)	20 (18)	1 (1)
Moradabad																				
Moradabad	74	19 (26)	4 (5)	— (—)	3 (4)	1 (1)	— (—)	22 (30)	1 (1)	1 (1)	7 (10)	3 (4)	1 (1)	5 (7)	0·4 (1)	— (—)	— (—)	— (—)	4 (5)	3 (4)
Amroha	110	15 (14)	1 (1)	— (—)	5 (4)	4 (4)	— (—)	36 (33)	2 (2)	— (—)	4 (4)	1 (1)	5 (4)	15 (14)	8 (4)	— (—)	— (—)	— (—)	10 (9)	7 (6)
Hasanpur	128	9 (7)	— (—)	— (—)	8 (6)	13 (10)	— (—)	45 (35)	3 (2)	— (—)	2 (2)	— (—)	5 (4)	12 (9)	15 (12)	— (—)	— (—)	— (—)	15 (12)	1 (1)
Sambhal	138	10 (7)	1 (1)	— (—)	16 (12)	14 (10)	neg (neg)	51 (37)	2 (1)	— (—)	4 (3)	5 (4)	7 (5)	13 (9)	5 (4)	— (—)	— (—)	— (—)	6 (4)	4 (3)
Bilari	101	13 (13)	2 (2)	— (—)	9 (9)	6 (6)	— (—)	35 (34)	1 (1)	— (—)	6 (6)	3 (3)	3 (3)	14 (14)	1 (1)	— (—)	— (—)	— (—)	4 (4)	4 (4)
Rampur																				
Shahabad	43	6 (14)	3 (7)	— (—)	3 (7)	2 (5)	— (—)	11 (25)	1 (2)	0·4 (1)	4 (9)	2 (5)	2 (5)	4 (9)	1 (2)	— (—)	— (—)	— (—)	1 (2)	3 (7)
Budaun																				
Budaun	116	9 (8)	2 (2)	— (—)	12 (10)	10 (8)	— (—)	35 (30)	1 (1)	— (—)	8 (7)	5 (4)	3 (3)	7 (6)	15 (13)	1 (1)	— (—)	— (—)	3 (3)	5 (4)
Dataganj.	108	13 (12)	4 (4)	— (—)	11 (10)	6 (6)	— (—)	32 (29)	1 (1)	— (—)	14 (13)	6 (6)	7 (7)	2 (2)	8 (7)	1 (1)	— (—)	— (—)	2 (2)	1 (1)
Sahaswan	107	3 (3)	1 (1)	— (—)	19 (17)	11 (10)	— (—)	33 (31)	4 (4)	— (—)	8 (7)	8 (7)	4 (4)	5 (5)	7 (7)	1 (1)	— (—)	— (—)	— (—)	3 (3)
Bisauli	104	6 (6)	2 (2)	— (—)	11 (10)	11 (10)	— (—)	33 (32)	1 (1)	— (+)	9 (9)	5 (5)	5 (5)	8 (8)	7 (7)	1 (1)	— (—)	— (—)	3 (3)	2 (2)
Bareilly																				
Aonla	73	4 (6)	4 (5)	— (—)	7 (11)	4 (5)	— (—)	15 (21)	1 (1)	— (—)	12 (16)	5 (7)	4 (5)	3 (4)	9 (12)	— (—)	— (—)	— (—)	2 (3)	3 (4)
Shahjahanpur																				
Tilhar	110	23 (21)	3 (3)	— (—)	7 (6)	1 (1)	— (—)	31 (21)	2 (2)	— (—)	10 (9)	3 (3)	8 (7)	10 (9)	2 (2)	— (—)	— (—)	— (—)	5 (5)	5 (5)

APPENDIX 4 *(Contd.)*

(thousand hectares)

District/taluk	Gca	Paddy	Jowar Kharif	Jowar Rabi	Bajra	Maize	Ragi	Wheat	Barley	Millets etc.	Gram	Tur	Pulses	Sugar-cane	Ground-nut	Oil seeds	Cotton	L	Fodder	Mc
	Rainfall Zone IV—(Contd.)							—			—		—			*Rainfall Pattern*—$E_4(B_2C_1E_1)E_4$				
Jalalabad	84	10 (12)	6 (7)	— (—)	6 (7)	6 (7)	— (—)	22 (26)	2 (2)	— (—)	11 (14)	5 (6)	7 (9)	2 (2)	1 (1)	0·4 (1)	— (—)	— (—)	2 (2)	4 (4)
Etah																				
Kasganj	122	4 (3)	1 (1)	— (—)	14 (12)	22 (18)	— (—)	35 (29)	3 (3)	— (—)	7 (5)	5 (4)	12 (10)	6 (5)	7 (5)	— (—)	— (—)	— —	2 (2)	4 (3)
Aliganj	126	5 (4)	3 (3)	— (—)	22 (17)	14 (11)	— (—)	34 (27)	4 (3)	— (—)	10 (8)	6 (4)	8 (6)	3 (3)	10 (8)	— (—)	— (—)	— (—)	1 (1)	6 (5)
Farrukhabad																				
Farrukhabad	118	5 (3)	5 (3)	— (—)	8 (7)	25 (22)	— (—)	35 (30)	5 (4)	— (—)	11 (9)	4 (3)	3 (3)	1 (1)	2 (2)	1 (1)	— (—)	— (—)	1 (1)	3 (3)
Kaimganj	79	3 (4)	3 (4)	— (—)	6 (8)	13 (16)	— (—)	28 (35)	2 (2)	— (—)	4 (6)	2 (3)	2 (3)	4 (5)	1 (1)	— (—)	— (—)	— (—)	1 (1)	10 (12)
Chhibramau	99	10 (10)	4 (4)	— (—)	4 (4)	21 (21)	— (—)	29 (30)	3 (3)	— (—)	8 (8)	3 (3)	3 (3)	2 (2)	2 (2)	2 (2)	— (—)	— (—)	1 (1)	7 (7)
Kannauj	74	9 (12)	5 (6)	— (—)	3 (4)	11 (15)	— (—)	16 (21)	5 (6)	— (—)	9 (12)	2 (3)	2 (3)	0·4 (1)	4 (6)	2 (2)	— (—)	— (—)	1 (1)	5 (6)
Hardoi																				
Hardoi	146	19 (13)	10 (7)	— (—)	1 (1)	9 (6)	— (—)	34 (23)	12 (8)	— (—)	17 (12)	4 (3)	9 (6)	9 (6)	16 (11)	— (—)	— (—)	— (—)	2 (1)	4 (3)
Shahabad	68	9 (13)	1 (1)	— (—)	— (—)	— (—)	— (—)	26 (38)	3 (5)	— (—)	16 (24)	1 (1)	1 (1)	5 (8)	5 (8)	— (—)	— (—)	— (—)	1 (1)	— (—)
Bilgram	154	9 (6)	11 (7)	— (—)	5 (3)	22 (14)	— (—)	31 (20)	14 (9)	— (—)	24 (16)	4 (3)	7 (5)	3 (2)	15 (10)	1 (—)	— (—)	— (—)	2 (1)	6 (4)
Sandila	121	15 (12)	8 (6)	— (—)	2 (2)	14 (12)	— (—)	29 (24)	10 (8)	1 (1)	10 (8)	4 (3)	3 (3)	3 (3)	17 (14)	— (—)	— (—)	— (—)	1 (1)	4 (3)
Agra																				
Bah	60	— (—)	2 (3)	— (—)	15 (25)	— (—)	— (—)	5 (8)	5 (8)	— (—)	16 (27)	8 (13)	— (—)	0·4 (1)	— (—)	6 (10)	— (—)	— (—)	— (—)	3 (5)
Etawah																				
Etawah	97	13 (14)	2 (2)	— (—)	14 (15)	9 (9)	— (—)	24 (25)	5 (5)	— (—)	11 (11)	6 (6)	3 (3)	2 (2)	— (—)	2 (2)	— (—)	— (—)	4 (4)	2 (2)
Bharthana	97	16 (17)	2 (2)	— (—)	12 (13)	8 (8)	— (—)	25 (26)	5 (5)	— (—)	8 (8)	5 (5)	5 (5)	2 (2)	— (—)	3 (3)	— (—)	— (—)	4 (4)	2 (2)
Bidhuna	96	22 (23)	4 (4)	— (—)	7 (7)	12 (13)	— (—)	25 (27)	2 (2)	— (—)	6 (6)	3 (3)	5 (5)	2 (2)	— (—)	4 (4)	— (—)	— (—)	2 (2)	2 (2)
Auraiya	100	7 (7)	2 (2)	— (—)	18 (18)	4 (4)	— (—)	19 (19)	7 (7)	— (—)	14 (14)	9 (9)	5 (5)	2 (2)	— (—)	9 (9)	— (—)	— (—)	3 (3)	1 (1)
Jalaun																				
Jalaun	118	5 (4)	5 (4)	— (—)	10 (8)	— (—)	— (—)	31 (26)	7 (6)	— (—)	38 (32)	7 (6)	7 (6)	2 (2)	— (—)	3 (3)	— (—)	— (—)	1 (1)	2 (2)
Kalpi	100	2 (2)	11 (11)	— (—)	5 (5)	— (—)	— (—)	20 (20)	2 (2)	— (—)	40 (40)	8 (8)	7 (7)	— (—)	— (—)	3 (3)	— (—)	— (—)	— (—)	2 (2)
Konch	91	2 (2)	4 (4)	— (—)	2 (2)	— (—)	— (—)	31 (35)	1 (1)	— (—)	39 (43)	3 (3)	3 (3)	— (—)	— (—)	2 (2)	— (—)	— (—)	0·4 (1)	4 (4)
Orai	74	1 (2)	6 (8)	— (—)	1 (2)	— (—)	— (—)	26 (32)	1 (2)	— (—)	29 (40)	3 (4)	2 (3)	— (—)	— (—)	2 (3)	— (—)	— (—)	— (—)	3 (4)

Kanpur																				
Kanpur	71	9 (13)	9 (13)	— (—)	1 (1)	3 (4)	— (—)	15 (21)	9 (13)	— (—)	13 (18)	4 (5)	1 (1)	1 (2)	— (—)	1 (1)	— (—)	— (—)	1 (1)	4 (6)
Bilhaur	82	12 (15)	6 (8)	— (—)	1 (1)	13 (16)	— (—)	18 (23)	8 (10)	— (—)	7 (9)	3 (4)	2 (3)	1 (1)	4 (5)	2 (3)	— (—)	— (—)	1 (1)	1 (1)
Akbarpur	84	14 (17)	8 (10)	— (—)	2 (2)	5 (6)	— (—)	23 (27)	6 (7)	— (—)	10 (13)	5 (6)	2 (2)	1 (1)	— (—)	3 (4)	— (—)	— (—)	1 (1)	4 (5)
Derapur	96	12 (13)	6 (6)	— (—)	8 (8)	8 (8)	— (—)	21 (23)	7 (7)	— (—)	11 (12)	7 (7)	4 (4)	1 (1)	— (—)	7 (7)	— (—)	— (—)	1 (1)	3 (3)
Bhognipur	87	12 (8)	5 (6)	— (—)	10 (12)	2 (2)	— (—)	14 (16)	8 (9)	— (—)	21 (24)	7 (9)	3 (3)	1 (1)	— (—)	6 (7)	— (—)	— (—)	1 (1)	2 (2)
Ghatampur	105	12 (11)	11 (10)	— (—)	6 (6)	1 (1)	— (—)	20 (19)	10 (9)	— (—)	24 (23)	7 (7)	3 (3)	2 (2)	— (—)	4 (4)	— (—)	— (—)	2 (2)	3 (3)
Unnao																				
Purwa	112	26 (23)	14 (12)	— (—)	3 (3)	2 (2)	— (—)	21 (19)	20 (18)	1 (1)	7 (6)	5 (4)	4 (4)	2 (2)	1 (1)	— (—)	— (—)	— (—)	1 (—)	5 (4)
Unnao	88	17 (19)	6 (7)	— (—)	1 (1)	9 (10)	— (—)	21 (23)	14 (16)	— (—)	6 (7)	4 (5)	3 (4)	1 (1)	2 (2)	— (—)	— (—)	— (—)	1 (1)	3 (4)
Hasanganj	96	19 (20)	6 (6)	— (—)	1 (1)	11 (12)	— (—)	23 (24)	10 (11)	— (—)	7 (7)	3 (3)	4 (4)	2 (2)	5 (5)	— (—)	— (—)	— (—)	1 (1)	4 (4)
Safipur	93	9 (10)	4 (4)	— (—)	3 (3)	14 (15)	— (—)	18 (20)	13 (14)	— (—)	11 (12)	3 (3)	5 (5)	3 (3)	8 (8)	1 (1)	— (—)	— (—)	1 (1)	— (—)
Lucknow																				
Lucknow	74	13 (17)	5 (7)	— (—)	4 (5)	4 (5)	— (—)	19 (26)	4 (5)	1 (1)	6 (8)	3 (5)	3 (5)	1 (1)	3 (5)	— (—)	— (—)	— (—)	1 (1)	7 (9)
Maliabad	66	11 (17)	4 (6)	— (—)	3 (5)	5 (7)	— (—)	18 (27)	5 (7)	1 (2)	8 (12)	2 (3)	4 (6)	1 (2)	2 (3)	— (—)	— (—)	— (—)	2 (3)	— (—)
Mohanlalganj	69	13 (19)	4 (6)	— (—)	3 (4)	neg (neg)	— (—)	18 (26)	2 (3)	1 (2)	5 (8)	3 (4)	3 (4)	4 (6)	3 (4)	— (—)	— (—)	— (—)	2 (3)	8 (11)
Bara Banki																				
Fatehpur	119	33 (28)	1 (1)	— (—)	1 (1)	6 (5)	— (—)	28 (23)	4 (3)	1 (1)	19 (16)	— (—)	5 (5)	9 (8)	— (—)	— (—)	— (—)	— (—)	3 (2)	9 (7)
Haidargarh	69	20 (29)	4 (6)	— (—)	2 (3)	2 (3)	— (—)	13 (19)	1 (1)	2 (3)	11 (14)	3 (5)	4 (6)	1 (1)	1 (1)	— (—)	— (—)	— (—)	2 (3)	3 (5)
Sitapur																				
Sidhauli	138	31 (22)	— (—)	— (—)	4 (3)	9 (6)	— (—)	33 (24)	7 (5)	4 (3)	20 (15)	1 (1)	4 (3)	10 (7)	1 (1)	— (—)	— (—)	— (—)	4 (3)	10 (7)
Biswan	149	21 (14)	— (—)	— (—)	3 (2)	37 (25)	— (—)	42 (28)	7 (5)	4 (3)	6 (4)	1 (1)	4 (2)	8 (6)	2 (1)	1 (—)	— (—)	— (—)	3 (2)	10 (7)
Sultanpur																				
Sultanpur	118	36 (30)	5 (4)	— (—)	1 (1)	1 (1)	— (—)	19 (16)	11 (9)	5 (4)	14 (12)	3 (3)	9 (8)	3 (3)	— (—)	— (—)	— (—)	— (—)	4 (3)	7 (6)
Musafirkhana	102	32 (31)	6 (6)	— (—)	— (—)	1 (1)	— (—)	14 (14)	4 (4)	4 (4)	17 (17)	2 (2)	6 (7)	1 (1)	— (—)	— (—)	— (—)	— (—)	4 (4)	10 (9)
Amethi	81	35 (43)	4 (5)	— (—)	1 (1)	— (—)	1 (1)	12 (15)	6 (8)	4 (5)	5 (6)	3 (4)	5 (6)	1 (1)	— (—)	— (—)	— (—)	— (—)	1 (1)	3 (4)
Faizabad																				
Akbarpur	134	47 (35)	3 (2)	— (—)	— (—)	1 (1)	— (—)	23 (17)	12 (9)	3 (2)	8 (6)	2 (2)	18 (13)	7 (5)	— (—)	— (—)	— (—)	— (—)	4 (3)	6 (5)
Rae Bareli																				
Mahrajganj	113	44 (38)	8 (7)	— (—)	— (—)	— (—)	— (—)	22 (19)	6 (6)	4 (4)	7 (6)	3 (3)	7 (7)	— (—)	— (—)	— (—)	— (—)	— (—)	1 (1)	11 (9)

APENDIX 4 (*Contd.*)

(thousand hectares)

District/taluk	Gca	Paddy	Jowar Kharif	Jowar Rabi	Bajra	Maize	Ragi	Wheat	Barley	Millets etc.	Gram	Tur	Pulses	Sugarcane	Groundnut	Oilseeds	Cotton	L	Fodder	Mc
		Rainfall Zone—IV				..		..		..			..		..	*Rainfall Pattern—E_4 (B_2 C_1 E_1)E_4*				
Rai Bareli	80	18	7	—	4	neg	1	15	10	2	5	3	8	1	3	—	—	—	0·4	3
		(20)	(9)	(—)	(6)	(neg)	(1)	(17)	(12)	(4)	(7)	(4)	(10)	(1)	(4)	(—)	(—)	(—)	(1)	(4)
Salon	95	27	8	—	3	1	1	14	13	4	4	4	11	—	—	—	—	—	0·4	5
		(28)	(8)	(—)	(3)	(1)	(1)	(15)	(14)	(4)	(4)	(4)	(11)	(—)	(—)	(—)	(—)	(—)	(1)	(6)
Dalmau	101	19	13	—	3	—	1	16	22	1	6	7	6	2	1	neg	—	—	1	3
		(19)	(13)	(—)	(3)	(—)	(1)	(16)	(21)	(1)	(6)	(7)	(6)	(2)	(1)	(neg)	(—)	(—)	(1)	(3)
Fatehpur																				
Fatehpur	148	34	13	—	5	—	neg	22	20	—	32	7	3	3	—	1	—	—	3	5
		(23)	(9)	(—)	(3)	(—)	(neg)	(15)	(14)	(—)	(22)	(5)	(2)	(2)	(—)	(neg)	(—)	(—)	(2)	(3)
Bindki	115	14	12	—	6	—	—	17	12	—	28	8	3	3	—	2	—	—	2	8
		(12)	(10)	(—)	(5)	(—)	(—)	(15)	(10)	(—)	(24)	(7)	(3)	(3)	(—)	(2)	(—)	(—)	(2)	(7)
Khaga	98	22	6	—	7	—	1	11	18	1	16	6	1	2	—	—	—	—	2	5
		(23)	(6)	(—)	(7)	(—)	(1)	(11)	(19)	(1)	(16)	(6)	(1)	(2)	(—)	(—)	(—)	(—)	(2)	(5)
Hamirpur																				
Hamirpur	89	1	12	—	2	—	—	21	0·4	—	37	9	3	—	—	2	—	—	—	2
		(1)	(13)	(—)	(2)	(—)	(—)	(24)	(1)	(—)	(42)	(10)	(3)	(—)	(—)	(2)	(—)	(—)	(—)	(2)
Maudaha	126	1	16	—	neg	—	—	41	1	—	54	8	—	—	—	4	—	—	—	1
		(1)	(13)	(—)	(neg)	(—)	(—)	(32)	(1)	(—)	(43)	(6)	(—)	(—)	(—)	(3)	(—)	(—)	(—)	(1)
Mahoba	88	2	12	—	—	—	—	24	2	1	29	6	2	1	—	6	—	—	—	3
		(2)	(14)	(—)	(—)	(—)	(—)	(27)	(2)	(1)	(33)	(8)	(2)	(1)	(—)	(8)	(—)	(—)	(—)	(3)
Charkhari	101	1	13	—	—	—	—	29	2	1	38	6	1	1	—	8	—	—	—	1
		(1)	(13)	(—)	(—)	(—)	(—)	(29)	(2)	(1)	(39)	(6)	(1)	(1)	(—)	(8)	(—)	(—)	(—)	(1)
Rath	120	2	16	—	1	—	—	30	2	—	48	7	3	1	—	9	—	—	—	1
		(2)	(13)	(—)	(1)	(—)	(—)	(25)	(1)	(—)	(40)	(6)	(2)	(1)	(—)	(8)	(—)	(—)	(—)	(1)
Jhansi																				
Math	93	1	7	—	—	—	—	37	0·4	—	39	4	—	—	—	1	—	—	—	4
		(1)	(8)	(—)	(—)	(—)	(—)	(39)	(1)	(—)	(42)	(4)	(—)	(—)	(—)	(1)	(—)	(—)	(—)	(4)
Garautha	107	—	22	—	—	—	—	27	1	—	42	10	—	—	—	2	—	—	—	3
		(—)	(20)	(—)	(—)	(—)	(—)	(25)	(1)	(—)	(39)	(10)	(—)	(—)	(—)	(2)	(—)	(—)	(—)	(3)
Mauranipur	76	1	17	—	—	—	—	21	1	1	23	6	1	—	—	4	—	—	—	1
		(1)	(23)	(—)	(—)	(—)	(—)	(28)	(1)	(1)	(30)	(8)	(1)	(—)	(—)	(5)	(—)	(—)	(—)	(1)
Allahabad																				
Chail	66	10	3	—	9	—	—	7	12	—	14	6	2	1	—	—	—	—	1	1
		(15)	(5)	(—)	(13)	(—)	(—)	(11)	(18)	(—)	(21)	(8)	(4)	(2)	(—)	(—)	(—)	(—)	(2)	(2)
Phulpur	55	9	1	—	6	0·4	1	7	11	1	5	4	5	—	—	—	—	—	1	4
		(16)	(2)	(—)	(11)	(1)	(2)	(13)	(20)	(2)	(9)	(7)	(9)	(—)	(—)	(—)	(—)	(—)	(2)	(7)
Soraon	70	19	0·4	—	7	—	1	14	5	3	3	4	5	0·4	—	—	—	—	1	8
		(27)	(1)	(—)	(10)	(—)	(1)	(20)	(7)	(4)	(4)	(6)	(7)	(1)	(—)	(—)	(—)	(—)	(1)	(11)
Karchhana	84	25	5	—	9	—	—	8	11	2	9	7	3	1	—	1	—	—	2	1
		(29)	(6)	(—)	(11)	(—)	(—)	(10)	(13)	(3)	(11)	(8)	(4)	(1)	(—)	(1)	(—)	(—)	(2)	(1)
Allahabad																				
Manjhanpur	61	16	3	—	5	—	—	4	9	1	14	5	2	1	—	—	—	—	1	—
		(25)	(5)	(—)	(8)	(—)	(—)	(7)	(15)	(1)	(23)	(8)	(4)	(2)	(—)	(—)	(—)	(—)	(2)	(—)
Sirathu	49	10	3	—	5	—	—	4	8	1	10	3	3	0·4	—	—	—	—	1	1
		(20)	(6)	(—)	(10)	(—)	(—)	(8)	(17)	(2)	(20)	(6)	(6)	(1)	(—)	(—)	(—)	(—)	(2)	(2)
Bonda																				
Mau	52	2	8	—	6	—	1	5	5	2	15	6	1	—	—	2	—	—	neg	—
		(4)	(15)	(—)	(13)	(—)	(2)	(9)	(9)	(3)	(28)	(12)	(1)	(—)	(—)	(4)	(—)	(—)	(neg)	(—)

Jaunpur																				
Machhlishahr	85	29 (35)	1 (1)	— (—)	2 (2)	10 (12)	1 (1)	9 (11)	16 (19)	1 (1)	1 (1)	2 (1)	4 (5)	3 (3)	— (—)	— (—)	— (—)	— (—)	1 (1)	5 (6)
Mariahu	75	20 (27)	1 (1)	— (—)	2 (3)	8 (10)	— (—)	10 (13)	13 (17)	0·4 (1)	2 (2)	1 (1)	6 (8)	5 (7)	— (—)	— (—)	— (—)	— (—)	0.4 (1)	7 (9)
Shahganj	93	24 (26)	2 (2)	— (—)	1 (1)	15 (16)	— (—)	8 (9)	20 (22)	2 (2)	2 (2)	3 (3)	6 (7)	4 (4)	— (—)	— (—)	— (—)	— (—)	1 (1)	5 (5)
Rainfall Zone—V		..		..		..		..		..		..								*Rainfall Pattern—$E_4(B_2C_2)E_4$*
Azamgarh																				
Ghosi	97	29 (30)	— (—)	— (—)	— (—)	2 (2)	— (—)	13 (14)	15 (16)	6 (7)	4 (4)	5 (5)	12 (12)	8 (8)	— (—)	— (—)	— (—)	— (—)	1 (1)	2 (2)
Sagri	91	30 (33)	— (—)	— (—)	— (—)	2 (2)	— (—)	5 (5)	19 (21)	5 (5)	5 (6)	6 (7)	11 (12)	6 (7)	— (—)	— (—)	— (—)	— (+)	1 (1)	1 (1)
Muhammadabad	87	34 (39)	— (—)	— (—)	— (—)	2 (2)	— (—)	6 (7)	17 (20)	2 (2)	2 (2)	4 (5)	11 (13)	6 (7)	— (—)	— (—)	— (—)	— (—)	1 (1)	2 (2)
Lakhimpur Kheri																				
Lakhimpur	209	48 (23)	2 (1)	— (—)	1 (—)	12 (6)	— (—)	48 (23)	5 (2)	3 (1)	21 (10)	1 (1)	6 (3)	37 (18)	4 (2)	2 (1)	— (—)	— (—)	5 (2)	14 (7)
Mahamdi	143	22 (15)	5 (4)	— (—)	4 (3)	3 (2)	— (—)	34 (23)	8 (6)	2 (1)	15 (11)	3 (2)	5 (4)	25 (17)	9 (7)	— (—)	— (—)	— (—)	6 (4)	2 (1)
Sitapur																				
Sitapur	127	24 (19)	1 (1)	— (—)	1 (1)	3 (2)	— (—)	32 (25)	5 (4)	5 (4)	21 (17)	2 (2)	4 (3)	14 (10)	3 (3)	— (—)	— (—)	— (—)	5 (4)	7 (5)
Misrikh	138	15 (11)	7 (5)	— (—)	2 (1)	1 (1)	— (—)	27 (20)	12 (9)	8 (6)	16 (12)	2 (1)	6 (4)	6 (4)	28 (21)	— (—)	— (—)	— (—)	6 (4)	2 (1)
Ghazipur																				
Zamania	82	21 (25)	2 (3)	— (—)	6 (7)	— (1)	— (—)	9 (11)	11 (13)	2 (3)	17 (21)	5 (6)	5 (6)	1 (1)	— (—)	— (—)	— (—)	— (—)	2 (3)	— (—)
Rainfall Zone—VI		..		..		..		..		..		..								*Rainfall Pattern—$E_4(B_3C_1)E_4$*
Balia																				
Rasra	111 (—)	39 (35)	— (—)	— (—)	2 (2)	— (—)	— (—)	7 (6)	19 (17)	6 (6)	5 (5)	3 (3)	17 (15)	13 (11)	— (—)	— (—)	— (—)	— (—)	— (—)	— (—)
Bansdih	103 (—)	24 (23)	— (—)	— (—)	— (—)	10 (10)	— (—)	13 (12)	18 (17)	6 (6)	10 (10)	5 (5)	11 (11)	6 (6)	— (—)	— (—)	— (—)	— (—)	— (—)	— (—)
Rainfall Zone—VII		..		..		..		..		..		..								*Rainfall Pattern—$E_4\ (B_3C_1)D_1E_4$*
Deoria																				
Salempur	130	29 (23)	— (—)	— (—)	1 (1)	7 (6)	1 (1)	20 (15)	21 (16)	19 (14)	4 (3)	5 (4)	14 (11)	8 (6)	— (—)	— (—)	— (—)	— (—)	1 (1)	— (—)
Deoria	143	38 (27)	— (—)	— (—)	— (—)	5 (3)	— —	29 (20)	19 (13)	18 (13)	5 (3)	1 (1)	12 (8)	14 (10)	— (—)	— (—)	— (—)	— (—)	1 (1)	1 (1)
Rainfall Zone—VIII		..		..		..		..		..		..								*Rainfall Pattern—$E_4\ (A_1B_1C_1E_1)E_4$*
Jhansi																				
Jhansi	46	2 (5)	4 (10)	— (—)	— (—)	4 (9)	— (—)	14 (31)	2 (4)	3 (6)	8 (16)	1 (2)	4 (9)	— (—)	— (—)	3 (6)	— (—)	— (—)	— (—)	1 (2)
Lalitpur																				
Lalitpur	109	6 (5)	24 (22)	— (—)	— (—)	9 (8)	— (—)	33 (30)	3 (3)	13 (12)	7 (6)	— (—)	6 (6)	— (—)	— (—)	5 (5)	— (—)	— (—)	— (—)	3 (3)
Maharoni	99	4 (4)	24 (24)	— (—)	— (—)	3 (3)	— (—)	33 (34)	2 (2)	14 (14)	7 (7)	— (—)	5 (5)	— (—)	— (—)	7 (7)	— (—)	— (—)	— (—)	— (—)

APPENDIX 4 (*Contd.*)

(thousand hectares)

District/Taluk	Gca	Paddy	Jowar-Kharif	Jowar Rabi	Bajra	Maize	Ragi	Wheat	Barley	Millets etc.	Gram	Tur	Pulses	Sugar-cane	Ground-nut	Oil seeds	Cotton	L	Fodder	Mc
Rainfall Zone—VIII (Contd.)							..	..		..		..		*Rainfall Pattern—$E_4 (A_1B_1 C_1 E_1)E_4$*						
Pratapgarh																				
Kunda	114	39 (34)	4 (4)	— (—)	6 (5)	— (—)	2 (2)	14 (12)	16 (14)	2 (2)	7 (6)	5 (4)	11 (10)	1 (1)	— (—)	— (—)	— (—)	— (—)	2 (2)	5 (4)
Patti	101	31 (30)	2 (2)	— (—)	8 (8)	2 (2)	1 (1)	8 (8)	19 (19)	3 (3)	4 (4)	5 (5)	10 (10)	2 (2)	— (—)	— (—)	— (—)	— (—)	2 (2)	4 (4)
Belha (Pratapgarh)	100	17 (17)	5 (5)	— (—)	11 (11)	— (—)	6 (6)	8 (8)	17 (17)	3 (3)	8 (8)	8 (8)	10 (10)	1 (1)	— (—)	— (—)	— (—)	— (—)	2 (2)	4 (4)
Rainfall Zone—IX				..		..		..		..		..		..		*Rainfall Pattern—$E_4(A_1B_1C_2)E_4$*				
Bareilly																				
Bareilly	115	25 (22)	5 (4)	— (—)	2 (2)	5 (4)	— (—)	30 (26)	1 (1)	1 (1)	10 (9)	2 (2)	5 (4)	9 (8)	7 (6)	— (—)	— (—)	— (—)	5 (4)	8 (7
Faridpur	64	11 (7)	1 (2)	— (—)	3 (5)	— (—)	— (—)	21 (32)	1 (2)	1 (2)	4 (6)	2 (3)	3 (5)	5 (7)	8 (12)	— (—)	— (—)	— (—)	3 (5)	1 (2)
Shahjahanpur																				
Shahjahanpur	89	19 (21)	3 (3)	— (—)	5 (6)	1 (2)	— (—)	23 (26)	2 (2)	— (—)	8 (9)	2 (2)	5 (6)	8 (9)	2 (2)	— (—)	— (—)	— (—)	4 (4)	7 (8)
Powayan	138	28 (22)	2 (1)	— (—)	5 (4)	2 (1)	— (—)	36 (21)	6 (4)	2 (1)	14 (10)	2 (1)	7 (5)	14 (10)	9 (6)	3 (2)	— (—)	— (—)	7 (5)	1 (1)
Rampur																				
Rampur	50	8 (16)	4 (8)	— (—)	1 (1)	7 (14)	— (—)	14 (28)	0·3 (1)	0·3 (1)	5 (10)	1 (1)	1 (1)	4 (8)	— (—)	— (—)	— (—)	— (—)	3 (6)	1 (2)
Milak	47	8 (17)	4 (9)	— (—)	0·4 (1)	7 (14)	— (—)	11 (23)	0·3 (1)	0·3 (1)	7 (15)	2 (5)	2 (4)	2 (4)	— (—)	— (—)	— (—)	— (—)	2 (4)	1 (2)
Suar	67	12 (18)	2 (3)	— (—)	1 (1)	10 (15)	— (—)	19 (28)	0·4 (1)	— (—)	6 (9)	1 (1)	1 (1)	6 (9)	— (—)	1 (1)	— (—)	— (—)	3 (5)	5 (8)
Rainfall Zone—X				..		..		..		..		..		..	*Rainfall Pattern—$E_4 (A_1\ B_2\ C_1)E_4$*					
Bara Banki																				
Nawabganj	88	24 (28)	2 (2)	— (—)	2 (2)	1 (1)	— (—)	28 (26)	1 (1)	1 (1)	11 (13)	1 (1)	4 (5)	6 (7)	1 (1)	— (—)	— (—)	— (—)	2 (2)	9 (10)
Ramsanehighat (Faizabad)	150	48 (32)	2 (2)	— (—)	1 (1)	4 (3)	— (—)	29 (20)	8 (5)	2 (2)	26 (17)	1 (1)	6 (4)	4 (2)	1 (1)	— (—)	— (—)	— (—)	5 (3)	13 (7)
Faizabad	83	29 (35)	1 (1)	— (—)	1 (1)	5 (6)	— (—)	23 (28)	1 (1)	3 (4)	7 (6)	1 (1)	3 (4)	5 (6)	— (—)	— (—)	— (—)	— (—)	2 (3)	2 (3)
Bekapur	112	36 (32)	3 (3)	— (—)	— (—)	3 (3)	— (—)	23 (20)	2 (1)	5 (4)	16 (15)	2 (2)	6 (5)	8 (7)	— (—)	— (—)	— (—)	— (—)	4 (4)	4 (4)
Tanda	86	26 (30)	— (—)	— (—)	— (—)	1 (1)	— (—)	18 (21)	7 (8)	7 (8)	3 (3)	— (—)	13 (15)	5 (6)	— (—)	— (—)	— (—)	— (—)	3 (4)	3 (4)
Azamgarh																				
Phulpur	112	38 (34)	— (—)	— (—)	— (—)	9 (8)	— (—)	6 (5)	23 (21)	3 (3)	2 (2)	5 (5)	12 (10)	7 (6)	— (—)	— (—)	— (—)	— (—)	1 (1)	6 (5)
Azamgarh	79	26 (33)	— (—)	— (—)	— (—)	4 (5)	— (—)	5 (6)	17 (21)	2 (3)	3 (4)	4 (5)	8 (10)	5 (6)	— (—)	— (—)	— (—)	— (—)	2 (3)	3 (4)

Lalganj	90	41 (46)	— (—)	— (—)	— (—)	5 (6)	— (—)	4 (4)	16 (18)	4 (4)	2 (2)	2 (2)	10 (11)	5 (6)	— (—)	— (—)	— (—)	— (—)	1 (1)	— (—)
Jaunpur																				
Jaunpur	73	7 (9)	2 (3)	— (—)	1 (1)	18 (25)	— (—)	7 (10)	22 (30)	1 (1)	2 (3)	1 (1)	3 (5)	3 (4)	— (—)	— (—)	— (—)	— (—)	— (—)	6 (8)
Keraket	61	11 (18)	1 (2)	— (—)	2 (3)	11 (18)	— (—)	6 (10)	15 (24)	2 (3)	2 (3)	1 (2)	3 (5)	3 (5)	— (—)	— (—)	— (—)	— (—)	1 (2)	3 (5)
Ghazipur																				
Saidpur	122	31 (26)	1 (1)	— (—)	15 (12)	6 (5)	— (—)	9 (7)	25 (20)	4 (3)	4 (3)	7 (6)	11 (9)	7 (6)	— (—)	— (—)	— (—)	— (—)	2 (2)	—) (—
Ghazipur	60	17 (29)	1 (2)	— (—)	2 (3)	1 (2)	— (—)	7 (11)	11 (18)	2 (4)	4 (6)	2 (3)	4 (7)	4 (6)	— (—)	— (—)	— (—)	— (—)	1 (2)	4 (7)
Muhammadabad	85	24 (28)	3 (4)	— (—)	2 (2)	— (—)	— (—)	7 (8)	10 (12)	5 (6)	8 (9)	4 (5)	14 (17)	4 (5)	— (—)	— (—)	— (—)	— (—)	2 (2)	2 (2)
Ballia																				
Ballia	105	11 (11)	2 (2)	— (—)	3 (3)	15 (14)	— (—)	14 (13)	12 (11)	4 (4)	22 (21)	5 (5)	14 (13)	3 (3)	— (—)	— (—)	— (—)	— (—)	— (—)	— (—)
Basti																				
Harraiya	123	39 (32)	— (—)	— (—)	— (—)	9 (7)	— (—)	35 (28)	4 (3)	9 (7)	3 (3)	— (—)	12 (10)	7 (6)	— (—)	— (—)	— (—)	— (—)	4 (3)	1 (1)
Sultanpur																				
Kadipur	104	33 (32)	5 (4)	— (—)	1 (1)	4 (4)	— (—)	10 (10)	18 (17)	4 (4)	4 (4)	3 (3)	12 (11)	4 (4)	— (—)	— (—)	— (—)	— (—)	3 (2)	(3)
	Rainfall Zone—XI			..		..		..			..		..				*Rainfall Pattern—F_4 (A_2 B_1 C_2) E_4*			
Banda																				
Banda	137	7 (5)	16 (12)	— (—)	3 (2)	— (—)	— (—)	34 (25)	1 (neg.)	— (—)	61 (45)	8 (6)	2 (1)	— (—)	— (—)	1 (1)	— (—)	— (—)	1 (—)	4 (3)
Baheru	156	32 (21)	9 (6)	— (—)	3 (2)	— (—)	— (—)	38 (26)	1 (—)	— (—)	53 (34)	8 (5)	9 (6)	— (—)	— (—)	1 (—)	— (—)	— (—)	1 (—)	1 (—)
Naraini	126	35 (28)	8 (6)	— (—)	— (—)	— (—)	— (—)	29 (23)	3 (2)	1 (1)	40 (32)	— (—)	1 (1)	1 (1)	— (—)	3 (2)	— (—)	— (—)	— (—)	5 (4)
Karwi	115	9 (8)	18 (16)	— (—)	6 (5)	— (—)	— (—)	16 (14)	8 (7)	3 (2)	37 (31)	12 (10)	1 (1)	— (—)	— (—)	3 (2)	— (—)	— (—)	— (—)	2 (2)
Allahabad																				
Handia	72	21 (26)	2 (3)	— (—)	5 (7)	1 (2)	1 (2)	9 (13)	12 (17)	2 (3)	2 (3)	3 (5)	5 (7)	1 (1)	— (—)	— (—)	— (—)	— (—)	2 (3)	6 (8)
Meja*	156	32 (20)	6 (4)	— (—)	7 (4)	— (—)	— (—)	35 (22)	18 (12)	5 (3)	29 (19)	6 (4)	5 (3)	— (—)	— (—)	12 (8)	— (—)	— (—)	1 (1)	— (—)
Varanasi																				
Gyanpur	83	17 (20)	2 (2)	— (—)	8 (10)	2 (2)	1 (1)	10 (12)	14 (16)	1 (1)	5 (6)	4 (5)	7 (8)	3 (4)	— (—)	— (—)	— (—)	— (—)	2 (3)	7 (8)
Chandauli	144	65 (45)	2 (1)	— (—)	5 (4)	1 (1)	— (—)	12 (9)	17 (12)	3 (2)	15 (10)	3 (2)	6 (4)	3 (2)	— (—)	— (—)	— (—)	— (—)	3 (2)	9 (6)
Varanasi	162	32 (20)	2 (1)	— (—)	(10) (6)	11 (7)	— (—)	19 (12)	26 (15)	5 (3)	9 (5)	5 (3)	12 (8)	12 (8)	— (—)	— (—)	— (—)	— (—)	3 (2)	16 (10)
Chakia	58	28 (48)	— (—)	— (—)	— (—)	0·4 (1)	— (—)	10 (17)	2 (4)	— (—)	3 (5)	1 (2)	2 (3)	1 (2)	— (—)	— (—)	— (—)	— (—)	— (—)	11 (18)
Mirzapur																				
Mirzapur	144	27 (19)	6 (4)	— (—)	12 (8)	3 (2)	— (—)	18 (12)	17 (12)	13 (9)	18 (12)	9 (6)	5 (3)	2 (2)	— (—)	8 (6)	— (—)	— (—)	2 (2)	4 (3)

APPENDIX 4 (*Contd.*)

(Thousand hectares)

District/taluk	Gca	Paddy	Jowar Kharif	Jowar Rabi	Bajra	Maize	Ragi	Wheat	Barley	Millets etc.	Gram	Tur	Pulses	Sugar cane	Ground nut	Oil-seeds	Cotton	L	Fodder	Mc
	Rainfall Zone—XI (Concld.)					..		..		..		..		..	*Rainfall Pattern—E_4 (A_2 B_1 C_1) E_4*					
Chunar	110	40 (36)	1 (1)	— (—)	5 (4)	3 (3)	— (—)	15 (13)	7 (6)	4 (4)	8 (7)	4 (4)	14 (13)	2 (2)	— (—)	3 (3)	— (—)	— (—)	1 (1)	3 (3)
	Rainfall Zone—XII					..		..		..		..		..	*Rainfall Pattern—E_4 (A_2 C_1)E_4*					
Mirzapur																				
Robertsganj	155	57 (37)	3 (2)	— (—)	— (—)	5 (3)	— (—)	23 (15)	11 (7)	16 (10)	11 (7)	2 (1)	16 (10)	— (—)	— (—)	10 (7)	— (—)	— (—)	— (—)	1 (1)
Dudhi	65	10 (15)	— (—)	— (—)	— (—)	6 (10)	— (—)	1 (1)	9 (14)	28 (43)	2 (3)	1 (1)	3 (5)	— (—)	— (—)	5 (8)	— (—)	— (—)	— (—)	— (—)
Bijnor																				
Dhampur	123	32 (26)	— (—)	— (—)	1 (1)	— (—)	— (—)	32 (26)	1 (1)	1 (1)	7 (6)	— (—)	2 (2)	26 (21)	1 (1)	— (—)	— (—)	— (—)	17 (12)	3 (3)
Moradabad																				
Jhakurduara	58	18 (31)	1 (2)	— (—)	1 (1)	2 (3)	— (—)	16 (27)	1 (2)	1 (2)	6 (10)	— (—)	1 (3)	5 (8)	— (—)	— (—)	— (—)	— (—)	4 (8)	2 (3)
	Rainfall Zone—XIII					..		..		..		..		..	*Rainfall Pattern—E_4 ($A_2B_1C_1$)E_4*					
Dehradun																				
Dehradun	57	10 (18)	— (—)	— (—)	— (—)	7 (11)	2 (4)	17 (28)	0·4 (1)	1 (2)	1 (2)	— (—)	3 (6)	6 (10)	— (—)	1 (2)	— (—)	— (—)	3 (6)	6 (10)
Bijnor																				
Najibabad	81	19 (23)	— (—)	— (—)	— (—)	2 (2)	— (—)	21 (27)	1 (1)	1 (1)	6 (7)	— (—)	2 (2)	12 (16)	3 (4)	2 (3)	— (—)	— (—)	7 (8)	5 (6)
Nagina	96	27 (29)	— (—)	— (—)	— (—)	5 (5)	— (—)	24 (25)	1 (1)	— (—)	10 (10)	— (—)	3 (4)	16 (17)	0·4 (1)	— (—)	— (—)	— (—)	6 (6)	4 (4)
Nainital																				
Kashipur	46	13 (28)	— (—)	— (—)	— (—)	3 (7)	— (—)	11 (23)	— (—)	— (—)	3 (7)	— (—)	2 (5)	7 (15)	— (—)	2 (4)	— (—)	— (—)	3 (7)	2 (5)
Kichha	38	7 (18)	— (—)	— (—)	— (—)	5 (13)	— (—)	9 (24)	— (—)	— (—)	1 (3)	— (—)	2 (5)	9 (24)	— (—)	3 (7)	— (—)	— (—)	1 (3)	1 (3)
Khatima	43	17 (40)	— (—)	— (—)	— (—)	3 (7)	— (—)	8 (19)	— (—)	— (—)	6 (14)	— (—)	4 (9)	3 (7)	— (—)	1 (2)	— (—)	— (—)	1 (2)	— (—)
Bareilly																				
Baheri	110	29 (27)	3 (3)	— (—)	— (—)	7 (6)	— (—)	24 (22)	— (—)	1 (1)	9 (8)	1 (1)	5 (4)	18 (16)	— (—)	— (—)	— (—)	— (—)	5 (5)	8 (7)
Nawabganj	67	24 (36)	1 (1)	— (—)	— (—)	— (—)	— (—)	18 (26)	1 (1)	1 (1)	5 (7)	— (—)	2 (3)	8 (12)	1 (1)	— (—)	— (—)	— (—)	3 (6)	3 (6)
Pilibhit																				
Pilibhit	110	42 (38)	— (—)	— (—)	— (—)	1 (1)	— (—)	29 (26)	1 (1)	— (—)	9 (8)	1 (1)	4 (4)	16 (14)	— (—)	— (—)	— (—)	— (—)	3 (3)	4 (4)
Puranpur	86	20 (23)	— (—)	— (—)	4 (5)	4 (5)	— (—)	22 (25)	2 (2)	— (—)	5 (6)	— (—)	5 (6)	13 (15)	— (—)	4 (5)	— (—)	— (—)	3 (3)	4 (5)
Bisalpur	89	29 (33)	1 (1)	— (—)	1 (1)	— (—)	— (—)	21 (24)	1 (1)	1 (1)	8 (9)	1 (1)	4 (4)	13 (15)	1 (1)	— (—)	— (—)	— (—)	5 (6)	3 (3)
Kheri																				
Nighasan	209	45 (21)	— (—)	— (—)	— (—)	37 (18)	— (—)	41 (20)	5 (2)	5 (2)	5 (2)	— (—)	10 (5)	24 (12)	6 (3)	11 (5)	— (—)	— (—)	2 (1)	18 (9)

Bahraich																				
Naupura	202	58	1	—	—	42	—	35	11	5	17	1	9	1	3	9	—	—	2	8
		(29)	(—)	(—)	(—)	(21)	(—)	(17)	(6)	(2)	(9)	(—)	(5)	(—)	(2)	(4)	(—)	(—)	(1)	(4)
Rampur																				
Bilaspur	62	16	1	—	—	6	—	20	—	—	5	1	2	5	—	3	—	—	2	1
		(26)	(2)	(—)	(—)	(10)	(—)	(32)	(—)	(—)	(8)	(2)	(3)	(8)	(—)	(4)	(—)	(—)	(3)	(2)

Rainfall Zone—XIV .. .. *Rainfall Pattern*—E_4 (A_2 B_1 C_1) D_1 E_3

Bahraich																				
Bahraich	236	66	—	—	—	51	neg.	55	10	5	12	1	8	1	2	8	—	—	3	8
		(28)	(—)	(—)	(—)	(24)	(—)	(23)	(4)	(2)	(5)	(—)	(4)	(—)	(1)	(4)	(—)	(—)	(1)	(4)
Kaisarganj	173	30	—	—	1	60	—	44	8	2	9	—	6	4	2	—	—	—	2	5
		(17)	(—)	(—)	(—)	(35)	(—)	(26)	(5)	(1)	(5)	(—)	(4)	(2)	(1)	(—)	(—)	(—)	(1)	(3)
Gonda																				
Gonda	170	49	—	—	—	27	—	41	7	4	17	1	11	4	—	1	—	—	2	6
		(29)	(—)	(—)	(—)	(16)	(—)	(25)	(4)	(2)	(10)	(—)	(7)	(2)	(—)	(1)	(—)	(—)	(1)	(3)
Tarabganj	171	37	—	—	1	44	—	47	8	2	10	1	6	8	—	1	—	—	2	4
		(22)	(—)	(—)	(—)	(26)	(—)	(28)	(5)	(1)	(6)	(—)	(4)	(5)	(—)	(—)	(—)	(—)	(1)	(2)
Balrampur	242	99	1	—	—	25	—	29	4	3	11	2	29	9	—	12	—	—	1	17
		(41)	(—)	(—)	(—)	(10)	(—)	(12)	(2)	(1)	(5)	(1)	(12)	(4)	(—)	(5)	(—)	(—)	(—)	(7)
Utraula	149	58	—	—	—	6	—	37	8	1	8	—	10	6	—	1	—	—	2	12
		(39)	(—)	(—)	(—)	(4)	(—)	(25)	(5)	(1)	(5)	(—)	(7)	(4)	(—)	(1)	(—)	(—)	(1)	(8)
Basti																				
Basti	135	49	—	—	—	4	—	40	4	6	3	—	14	10	—	—	—	—	2	[illegible]
		(36)	(—)	(—)	(—)	(3)	(—)	(30)	(3)	(5)	(2)	(—)	(10)	(8)	(—)	(—)	(—)	(—)	(1)	(2)
Bansi	112	47	—	—	—	2	—	20	14	10	3	—	9	3	—	1	—	—	1	2
		(42)	(—)	(—)	(—)	(2)	(—)	(18)	(13)	(9)	(3)	(—)	(8)	(3)	(—)	(—)	(—)	(—)	(—)	(2)
Domariaganj	147	69	—	—	—	2	—	39	7	9	4	—	10	5	—	1	—	—	1	—
		(47)	(—)	(—)	(—)	(1)	(—)	(27)	(5)	(6)	(2)	(—)	(7)	(3)	(—)	(1)	(—)	(—)	(1)	(—)
Naugarh	128	71	—	—	—	2	—	17	12	8	3	—	11	1	—	2	—	—	—	—
		(55)	(—)	(—)	(—)	(2)	(—)	(13)	(9)	(6)	(3)	(—)	(9)	(1)	(—)	(2)	(—)	(—)	(—)	(—)
Khalilabad	140	46	—	—	—	3	—	32	11	11	3	—	23	6	—	—	—	—	2	3
		(33)	(—)	(—)	(—)	(2)	(—)	(23)	(8)	(8)	(2)	(—)	(17)	(4)	(—)	(—)	(—)	(—)	(1)	(2)
Gorakhpur																				
Gorakhpur	188	52	—	—	—	5	—	59	18	22	5	—	11	7	2	—	—	—	1	6
		(28)	(—)	(—)	(—)	(3)	(—)	(31)	(9)	(12)	(3)	(—)	(6)	(4)	(1)	(—)	(—)	(—)	(—)	(3)
Bansgaon	128	27	—	—	—	4	—	27	23	26	3	1	10	2	—	—	—	—	1	4
		(21)	(—)	(—)	(—)	(3)	(—)	(22)	(18)	(21)	(2)	(1)	(7)	(1)	(—)	(—)	(—)	(—)	(1)	(3)
Pharenda	139	74	—	—	—	3	—	17	14	6	4	1	12	3	2	2	—	—	—	1
		(54)	(—)	(—)	(—)	(2)	(—)	(12)	(10)	(4)	(3)	(1)	(9)	(2)	(1)	(1)	(—)	(—)	(—)	(1)
Maharajganj	189	99	—	—	—	1	—	40	4	3	5	3	16	14	1	2	—	—	1	—
		(51)	(—)	(—)	(—)	(1)	(—)	(21)	(2)	(2)	(3)	(2)	(8)	(7)	(1)	(1)	(—)	(—)	(1)	(—)
Deoria																				
Hata	154	61	—	—	—	3	0·1	39	1	6	1	0·3	7	32	—	—	—	—	1	3
		(39)	(—)	—	(—)	(2)	(0·1)	(25)	(1)	(4)	(1)	(0·2)	(4)	(21)	(—)	(—)	(—)	(—)	(1)	(2)
Padrauna	250	53	0·4	—	1	13	1	110	10	10	2	2	16	25	—	—	—	—	1	6
		(21)	(·1)	(—)	(0·3)	(5)	(0·4)	(44)	(4)	(4)	(1)	(1)	(6)	(10)	(—)	(—)	(—)	(—)	(0·4)	(2)

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